MARCH

20¢

ASTOUNDING STORIES OF SUPER-SCIENCE

A CLAYTON MAGAZINE

SALVAGE IN SPACE
By JACK WILLIAMSON

Also Stories By
ARTHUR J. BURKS
HARL VINCENT
MURRAY LEINSTER

Fight colds if you would guard against

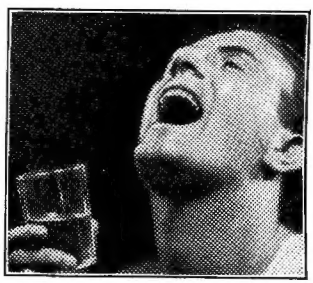
SINUS TROUBLE

Listerine gargle kills germs in mou

Tests have shown a reduction of bacteria on mouth surfaces as high as 99%

The racking pain . . . the months of misery . . . the serious operation . . . no indeed, you don't want sinus trouble. Many sinus infections begin with the common cold, an infection itself. The germs travel upward from the throat (where most colds begin), invading the tiny sinus passages.

What steps are you taking to fight colds this winter? Remember that not only sinusitis, but mastoid trouble and pneumonia are frequently traceable to colds. Why not begin now to gargle at least twice a day with full strength Listerine, the safe antiseptic with the pleasant taste?



When your throat is sore or you feel a cold coming on, gargle with Listerine every two hours. It often relieves the sore throat and checks the progress of the cold.

Listerine reduces colds

Tests, under careful supervision, have shown that those who gargled Listerine twice-a-day caught cold less often than those who did not gargle with it.

And mark this: When Listerine users did contract colds, the colds were less severe than those of non-users.

The cause of the average cold and simple sore throat is a germ, scientists now believe. Accompanying the cold in its development are various other germs—millions of them. They help to irritate the tissues—make the cold more severe.

Bacterial reduction up to 99%

The moment full strength Listerine enters the mouth it kills millions of germs on the surfaces of the mucous membrane; tests have shown reductions of bacterial count ranging to 99%.

Gets results because safe

The results achieved by Listerine in checking colds and sore throat cannot be expected from ordinary mouth washes so harsh they irritate the mucous membrane. Listerine's success lies in the fact that while fatal to germs, it is at the same time safe to use; does not irritate the tissue.

Remember this factor of safety when buying a mouth wash. Ask for Listerine and *see that you get it.*

Keep the bottle handy, and to ward off colds, gargle every morning and every night. When you feel a cold coming on, increase the gargle to once every two hours, call your physician and abide by his instructions.

Lambert Pharmacal Company, St. Louis, Missouri.

AND IT CHECKS SORE THROAT

Clean Out Your Kidneys--Win Back Your Pep

"Stop Getting Up Nights—Whip Burning Acidity That Saps Vitality—Make Guaranteed Cystex Test

There is nothing that can make men or women feel more run-down, nervous and lacking in vitality than poor functioning of the thousands of tiny, delicate tubes in the Kidneys.

If poorly functioning Kidneys or Bladder are stealing your Vitality and make it hard for you to keep up with the speed of modern life—if they make you suffer from Getting Up Nights, Leg Pains, Nervousness, Stiffness, Burning, Smarting, Itching, Acidity, Neuralgia or Rheumatic Pains, Lumbago or Circles Under Eyes, don't waste a minute. Try the Doctor's prescription called Cystex (pronounced Siss-tex).

Thousands of men and women are getting back on their feet, sleep like babies, and feel years younger by fighting irritating acidity and poor Kidney and Bladder functions with this Doctor's prescription called Cystex, specially prepared for these troubles.

This guaranteed medicine starts work in 15 minutes. Acts as a mild, gentle laxative to the Kidneys, helping them clean out poisons, wastes and acids in the blood. Soothes and tones raw, irritated tissues. Be sure to get Cystex, the special laxative for the Kidneys. Ordinary bowel laxatives can't do the work. Cystex is helping millions of sufferers and is guaranteed to fix you up to your satisfaction or money back on return of empty package. Cystex (pronounced Siss-tex) is only 75c at all druggists. Don't suffer from delay, get Cystex today.

THE KEY TO LIFE

ROSICRUCIAN MYSTERIES

FREE INTRODUCTORY BOOK

--- explains the practical, useful, modern teachings of the Rosicrucians. (Non-Religious) Dignified, uplifting, mental and metaphysical principles easily used to overcome life's obstacles. Write for FREE book, "The Wisdom of the Sages," and learn how to receive this knowledge.

Address: Scribe F. J. Y.

ROSICRUCIAN BROTHERHOOD

San Jose (AMORC) California

LEARN in CALIFORNIA

TELEVISION-RADIO TALKING PICTURES

In just a few years, Radio has become one of the world's leading industries. Talking pictures have brought new life and opportunity to the Movies. Now, Television is here with a promise of growth and activity so great it cannot be estimated. Come to Los Angeles and learn these fascinating Trades.

BUT—YOU MUST BE TRAINED

Times are getting better. The worst of the depression is over. Thousands of new jobs will call for TRAINED MEN. Will you be ready? Regardless of the times, the Trained man wins. He always has and he always will. Take that fact as a guide and your future is assured.

SPECIAL NEW COURSE—
RADIO BROADCAST TECHNICIAN

Special course given to students who enroll immediately. We broadcast over our own station and also by remote control.

EARN
Room and Board

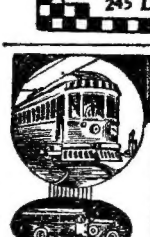
75% of our students are earning their living expenses while attending school now. We help you get a job to pay living expenses while learning. If you are short of money, write and explain your problem. We also allow your Coach Railroad Fare to Los Angeles.

Send for Free Book

You will find the facilities here a positive revelation. Get our new book, which gives you all the facts, no obligation—SEND COUPON AT ONCE.

MONEY FOR YOU AT HOME

YOU can earn good money in spare time at home making display cards. No selling or canvassing. We instruct you, furnish complete outfit and supply you with work. Write to-day for free booklet.
The MENHENITT COMPANY, Limited
245 Dominion Bldg., Toronto, Ont.



BE A PASSENGER TRAFFIC INSPECTOR

Steady Pay Plus Expenses—Bus and Railway

ACTIVE MEN—19 to 55 needed as *Railway and Bus Passenger Traffic Inspectors*. S.B.T.I. graduates are in demand. Travel or remain near home—meet high officials. On completion of a few weeks' home study course, we'll place you at $120 to $150 per month up, plus expenses, to start, *or refund tuition*. Many graduates go on to important executive positions in this big field of Transportation. Free Booklet.

STANDARD BUSINESS TRAINING INSTITUTE
Div. 1303 Buffalo, N. Y.

NATIONAL RADIO & ELECTRICAL SCHOOL Los Angeles

Dept. NG-3. 4006 So. Figueroa St.
Send Book and full details of Courses.

NAME.....

ADDRESS.....

CITY.....STATE.....

20¢

ASTOUNDING STORIES OF SUPER-SCIENCE

Issued Every Other Month

W. M. CLAYTON, Publisher — HARRY BATES, Editor

A CLAYTON MAGAZINE

The Clayton Standard on a Magazine Guarantees:

That the stories therein are clean, interesting, vivid, by leading writers of the day and purchased under conditions approved by the Authors' League of America;
That such magazines are manufactured in Union shops by American workmen;
That each newsdealer and agent is insured a fair profit;
That an intelligent censorship guards their advertising pages.

The other Clayton magazines are:

ACE-HIGH MAGAZINE, RANCH ROMANCES, COWBOY STORIES, CLUES, FIVE-NOVELS MONTHLY, RANGELAND LOVE STORY MAGAZINE, WESTERN ADVENTURES, STRANGE TALES, COMPLETE WESTERN LOVE NOVELETTES, COMPLETE MYSTERY NOVELETTES, COMPLETE ADVENTURE NOVELETTES, MY LOVE STORY MAGAZINE, and BUNK.

More Than Two Million Copies Required to Supply the Monthly Demand for Clayton Magazines.

VOL. XII, NO. 1

CONTENTS

MARCH, 1933

COVER DESIGN — H. W. WESSO

THE EXPANDING UNIVERSE — HARRY BATES
An Editorial.

SALVAGE IN SPACE — JACK WILLIAMSON — 6
To Thad Allen, Meteor Miner, Comes the Dangerous Bonanza of a Derelict Rocket-Flier Manned by Death Invisible.

LORDS OF THE STRATOSPHERE — ARTHUR J. BURKS — 22
High into Air Are the Great New York Buildings Lifted by a Ray Whose Source No Telescope Can Find. (A Complete Novelette.)

THE END OF TIME — WALLACE WEST — 64
By Millions of Millions the Creatures of Earth Slow and Drop When Their Time-Sense Is Mysteriously Paralyzed.

THE DEATH-TRAPS OF FX-31 — SEWELL PEASLEE WRIGHT — 82
Commander John Hanson Recalls His Harrowing Expedition among the Giant Spiders of FX-31.

WANDERER OF INFINITY — HARL VINCENT — 100
In the Uncharted Realms of Infra-Dimensional Space Bert Meets a Pathetic Figure—the Wanderer.

INVASION — MURRAY LEINSTER — 118
The Whole Fighting Fleet of the United Nations Is Caught in Kreynborg's Marvelous, Unique Trap.

THE SCIENCE FORUM — CARLYLE ELLIOTT, Ph.D. — 136
A Place Where Your Questions on Science Are Answered.

THE READERS' CORNER — ALL OF US — 138
A Meeting Place for Readers of ASTOUNDING STORIES.

Single Copies, 20 Cents — Yearly Subscription, $1.00

Issued bi-monthly by The Clayton Magazines, Inc., 155 East 44th Street, New York, N. Y. W. M. Clayton, President; Francis P. Pace, Secretary. Entered as second-class matter December 7, 1929, at the Post Office at New York, N. Y., under Act of March 3, 1879. Copyright, 1932, by The Clayton Magazines, Inc. Title registered as a Trade-Mark in the U. S. Patent Office. Member Newsstand Group. For advertising rates address The Newsstand Group, Inc., 155 East 44th Street, New York; or The Wrigley Bldg., Chicago.

OLD MONEY and stamps WANTED

POST YOURSELF! It pays! I paid J. D. Martin, Virginia, $200 for a single copper cent. Mr. Manning, New York, $2,500 for one silver dollar. Mrs. G. F. Adams $740 for a few old coins. I want all kinds of old coins, medals, bills and stamps. I pay big cash premiums.

WILL PAY $100 FOR DIME.

1894 S. Mint: $50 for 1913 Liberty Head Nickel (not buffalo) and hundreds of other amazing prices for coins. Get in touch with me. Send 4c for Large Illustrated Coin Folder and further particulars. It may mean much profit to you. Write today to

NUMISMATIC COMPANY OF TEXAS
Dept. 163 FORT WORTH, TEXAS
[Largest Rare Coin Establishment in U. S.]

EARN MONEY AT HOME

YOU can make $15 to $50 weekly in spare or full time at home coloring photographs. No experience needed. No canvassing. We instruct you by our new simple Photo-Color process and supply you with work. Write for particulars and Free Book to-day.

The IRVING-VANCE COMPANY Ltd.
152 Hart Building, Toronto, Can.

BIG MONEY SELLING SHIRTS

AGENTS WANTED to represent old-established firm and take orders. Make Big Money every day! Big complete line direct to wearer. Dress Shirts, Work Shirts, Neckwear, Underwear, Dresses, Smocks, Hosiery, Swim Suits, Sweaters, Pajamas, Pants, Belts, Breeches, Play Suits, Overalls, Coveralls, Raincoats, Uniforms, Shop Coats. Everything guaranteed. Experience unnecessary. BIG OUTFIT FREE! Write quick.

NIMROD COMPANY, Dept. 75
4922-28 Lincoln Ave. Chicago, Ill.

NO JOKE TO BE DEAF

—EVERY DEAF PERSON KNOWS THAT

George P. Way made himself hear, after being deaf for 25 years, with Artificial Ear Drums —his own invention. He wore them day and night. They stopped head noises and ringing ears. They are invisible and perfectly comfortable. No one sees them. Write for his true story, "How I Got Deaf and Made Myself Hear." Also booklet on Deafness. Address

Artificial Ear Drum

George P. Way, Inc., 737 Hofmann Building, Detroit, Michigan

PATENTS

Write Today

TIME COUNTS IN APPLYING for patents. Send sketch or model for instructions or write for free book, "How to Obtain a Patent" and "Record of Invention" form. No charge for information on how to proceed. Clarence A. O'Brien, Registered Patent Attorney, 187-B Adams Building, Washington, D. C.

LAW

STUDY AT HOME

Legally trained men win high positions and big success in business and public life. Be independent. Greater opportunities now than ever before. Big corporations are headed by men with legal training. Earn

$5,000 to $10,000 Annually

We guide you step by step. You can train at home during spare time. Degree of LL. B. conferred. Successful graduates in every section of the United States. We furnish all text material, including fourteen-volume Law Library. Low cost, easy terms. Get our valuable 64-page "Law Guide" and "Evidence" books FREE. Send for them NOW.

LaSalle Extension University, Dept. 375-L, Chicago
The World's Largest Business Training Institution

New LOW PRICES ON GOOD YEAR GOODRICH-U.S.-FIRESTONE FISK AND OTHER TIRES

LOWEST Prices on Earth!

Thousands of satisfied tire users all over the U.S.A. will vouch for the LONG, HARD SERVICE, under severest road conditions of our standard brand tires reconstructed by the ORIGINAL SECRET YORK PROCESS. To introduce this genuine tire value to you, this big responsible company offers, ABSOLUTELY FREE a modern tire gauge with each 2 tires ordered—now take pressure through side wall of tire in a jiffy—no fuss—no dirt. OUR 16 YEARS IN BUSINESS makes it possible to offer tires at LOWEST PRICES in history.

Guaranteed to give12 months' service

Don't Delay — Order Today

CORD Tires			BALLOON Tires		
Size	Tires	Tubes	Size	Tires	Tubes
30x3	$1.90	$0.75	29x4.40	$2.00	$0.95
30x3½	2.10	0.85	29x4.50	2.10	0.95
32x3½	2.70	0.90	30x4.50	2.15	0.95
31x4	2.75	0.95	28x4.75	2.20	1.00
32x4	2.75	0.95	29x4.75	2.25	1.00
33x4	2.75	0.95	30x4.95	2.50	1.10
34x4	3.25	1.15	29x5.00	2.60	1.20
32x4½	2.95	1.25	30x5.00	2.60	1.20
33x4½	2.95	1.25	28x5.25	2.65	1.25
34x4½	2.95	1.25	30x5.25	2.75	1.25
30x5	3.25	1.45	31x5.25	2.95	1.25
33x5	3.25	1.55	28x5.50	2.95	1.80
35x5	3.95	1.65	30x5.00	2.95	1.80
All Other Sizes			31x5.00	2.95	1.80
DEALERS WANTED			32x6.00	3.00	1.85
			32x6.00	3.20	1.35
			32x6.50	3.20	1.50

Send only $1.00 deposit with each tire ordered. We ship balance C. O. D. Deduct 5 percent if cash in full accompanies order.

TUBES BRAND NEW — GUARANTEED

Tires failing to give 12 months' service replaced at half price.

YORK TIRE & RUBBER CO., Dept. 1743
3855-59 Cottage Grove Ave. Chicago, Ill.

ANY PHOTO ENLARGED

Size 8x10 inches or smaller if desired. Same price for full length or bust form, groups, landscapes, pet animals, etc., or enlargements of any part of group picture. Safe return of original photo guaranteed.

47c

SEND NO MONEY Just mail photo or snapshot (any size) and within a week you will receive your beautiful life-like enlargement, guaranteed fadeless. Pay postman 47c plus postage—or send 49c with order and we pay postage. Big 16x20-inch enlargement sent C. O. D. 78c plus postage or send 80c and we pay postage. Take advantage of this amazing offer now. Send your photos today. Specify size wanted.

STANDARD ART STUDIOS, 908 W. Lake St., Dept. 593-C, Chicago, Ill.

FOLLOW THIS MAN

Secret Service Operator No. 38 is on the job! Running down dangerous Counterfeit Gang. Tell-tale finger prints in murdered girl's room.

Free *The Confidential Report Operator No. 38 made to his chief. Write for it.*

$3000 a year and up

YOU can become a Finger Print Expert at home, in your spare time, at small cost. Write for confidential full report and details. Literature will NOT be sent to boys under 17 years of age.

INSTITUTE OF APPLIED SCIENCE
1920 Sunnyside Ave.
Dept. 15-63 Chicago, Ill.

U. S. GOVERNMENT JOBS!

$1260 to $3400 Year

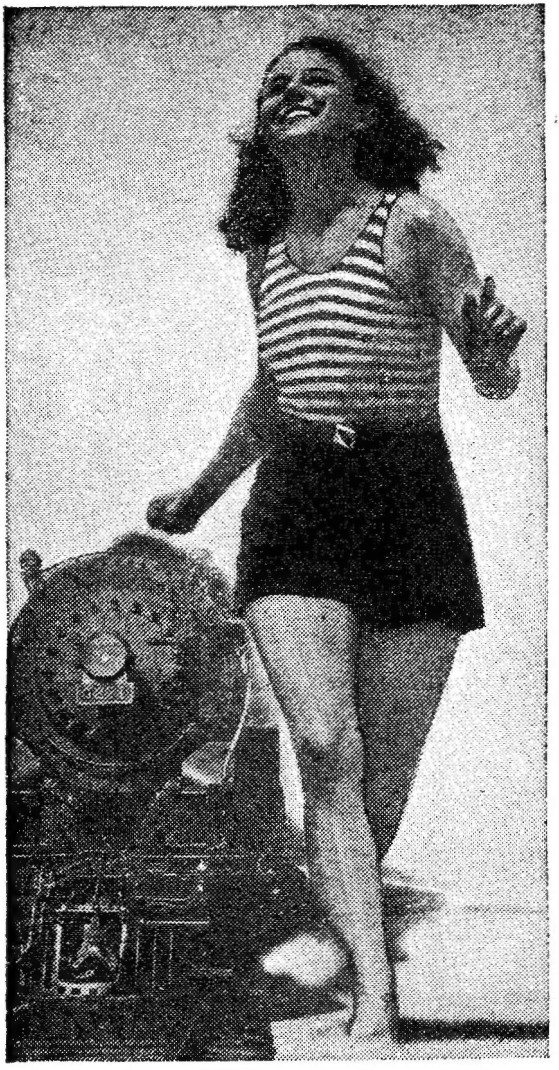
Steady Work
Short Hours
Common Education
Usually Sufficient
Men-Women, 18 to 50
Mail Coupon today sure.

COUPON

Franklin Institute, Dept. F-272
Rochester, N. Y.

Sirs: Rush to me without charge (1) 32-page book with list of future U. S. Government steady Jobs. (2) Tell me immediately how to get one of these Jobs.

Name.....
Address.....

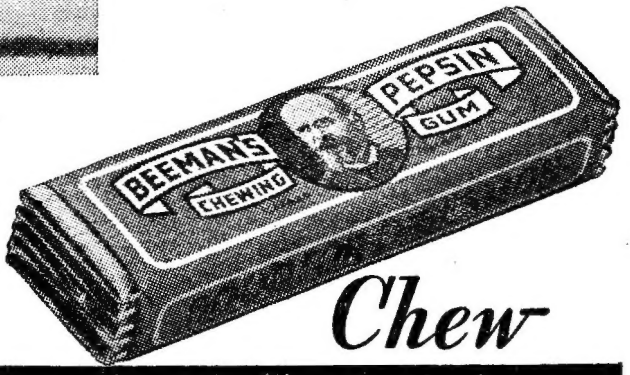


beats train!

Beats the Twentieth Century by two minutes. You almost feel as though you could when your digestion is right. You are so alive . . . so ready for anything.

Lots of girls wonder why they don't feel more like doing things. A touch of indigestion perhaps. Many chew Beeman's regularly to prevent digestive troubles. You'll like Beeman's . . . the flavor is delicious.

ESPECIALLY MADE TO AID DIGESTION



Chew

BEEMAN'S *Pepsin Gum*

The Expanding Universe

An Editorial by Harry Bates

TO be in line with the trend of modern scientific thought, it appears that we must accept the dictum that the universe is undergoing a wholesale inflation. Therefore if there is an earnest desire to study our celestial neighbors we would do well to set about it diligently within the next trillion years or so before the cosmic dust becomes so widely dispersed that our heavens are devoid of any visible stars and our solar system has whirled its way on to a solitary eternity.

On the other hand, if this theory does not appeal to one, there is an alternative. That is, that instead of undergoing an expansion, the universe is contracting and we will eventually have some sort of a get-together with distant solar systems the light from which may now be too feeble to be discerned. There is apparently no halfway measure. A static cosmos is not to be tolerated; the idea of constant motion is too characteristic of the concepts of natural philosophy to allow consideration of the absence of it.

The atom with its revolving electrons, the molecules, dizzily darting in obeyance to the kinetic law, larger agglomerates, such as solar systems with their well-ordered families of satellites ever coursing around their parent sun—all of these phenomena yield testimony to the fact that there is nothing static in the universe. And now we find that the great star-group of which our solar system forms an infinitesimal part is in process of pulling away from other star-groups.

Whether it is a case of expansion or contraction, it seems logical that we should be on our way. Without the remotest possibility of any interstellar binding force between these distant groups, it would seem an utter absurdity that through some freak of chance relative positions should just happen to remain constant.

Sir Arthur Eddington remarked at last year's meeting of the British Association for the Advancement of Science that "the theory of the expanding universe is in some respects so preposterous . . . that I feel almost an indignation that anyone should believe it—except myself." But just the same he believes in it so strongly that he has bothered to figure out the rate of expansion. Whatever that speed may be in miles per hour or in light years per second, Sir Arthur claims that the universe now occupies twice as much space as it did 1,300,000,000 years ago.

Dr. H. P. Robertson, of Princeton, using data obtained by Dr. Hubble at Mount Wilson, comes to the conclusion that the universe has attained a size thirteen times as great as it was originally. (The highly inaccurate nature of estimates of this kind is evident when we are told that if the presence of dark matter is taken into consideration, the universe may only have doubled.)

While Sir Arthur Eddington prefers to look upon the universe as an expanding one, he also entertains the possibility of a gradual contraction, in which case he says that an outside observer not subject to the universal contraction would view a diminution in everything—atoms, plants, animals and stellar systems. The earth would spiral nearer and nearer the sun with a dizzily increasing speed. The stage of terrestrial life would become increasingly smaller as would the actors themselves. Their gyrations would become faster and faster, and, as the last act begins, the curtain would open upon midget actors rushing through their parts at frantic speed. One last blur of intense agitation—and then nothing.

The expansion theory is more appealing to us. If there is anything distastefully imminent as it is, it is cramped quarters. What if infinite expansion is the ultimate? The theories of the curvature of space as propounded by Einstein, it would seem, would finally put an end to the expansion, and a contraction would eventually set in anyhow. The radial expansion in a "straight" line would of necessity, due to the curvature of space, cause the elements of the universe to "boomerang" back. All matter would again form a compact aggregate, possibly with a refusion and subsequent redistribution—a new creation.

Perhaps this cycle has occurred before. Perhaps it has happened a million times.

Picture a million solar systems tossed out of a molten chaos into space. Their natural inclination would be to follow a straight line, but the curvature of the medium in which they travel bends their courses into arcs of infinite radius.

Picture their ultimate return to the place of their birth after eons of time. Then a cataclysmic explosion, and, as their kinetic energy is reconverted back to heat, a re-fusion into one mass.

Then expansion: again the firmament is filled with stars.

Salvage in Space

By Jack Williamson

HIS "planet" was the smallest in the solar system, and the loneliest, Thad Allen was thinking, as he straightened wearily in the huge, bulging, inflated fabric of his Osprey space armor. Walking awkwardly in the magnetic boots that held him to the black mass of meteoric iron, he mounted a projection and stood motionless, staring moodily away through the vision panels of his bulky helmet into the dark mystery of the void.

His welding arc dangled at his belt, the electrode still glowing red. He had just finished securing to this slowly - accumulated mass of iron his most recent find, a meteorite the size of his head.

To Thad Allen, meteor miner, comes the dangerous bonanza of a derelict rocket-flier manned by death invisible.

Five perilous weeks he had labored, to collect this rugged lump of metal—a jagged mass, some ten feet in diameter, composed of hundreds of fragments, that he had captured and welded together. His luck had not been good. His findings had been heart-breakingly small; the spectro-flash analysis had revealed that the content of the precious metals was disappointingly minute.*

On the other side of this tiny sphere of hard-won treasure, his Millen atomic rocket was sputtering, spurts of hot blue flame jetting from its exhaust. A simple mechanism, bolted to the first sizable fragment he had captured, it drove the iron ball through space like a ship.

Through the magnetic soles of his insulated boots, Thad could feel the vibration of the iron mass, beneath the rocket's regular thrust. The magazine of uranite fuel capsules was nearly empty, now, he reflected. He would soon have to turn back toward Mars.

Turn back. But how could he, with so slender a reward for his efforts? Meteor mining is expensive. There was his bill at Millen and Helion, Mars, for uranite and supplies. And the unpaid last instalment on his Osprey suit. How could he outfit himself again, if he returned with no more metal than this? There were men who averaged a thousand tons of iron a month. Why couldn't fortune smile on him?

---

*The meteor or asteroid belt, between the orbits of Mars and Jupiter, is "mined" by such adventurers as Thad Allen for the platinum, iridium and osmium that all meteoric irons contain in small quantities. The meteor swarms are supposed by some astronomers to be fragments of a disrupted planet, which, according to Bode's Law, should occupy this space.

He knew men who had made fabulous strikes, who had captured whole planetoids of rich metal, and he knew weary, white-haired men who had braved the perils of vacuum and absolute cold and bullet-swift meteors for hard years, who still hoped.

But sometime fortune had to smile, and then. . . .

The picture came to him. A tower of white metal, among the low red hills near Helion. A slim, graceful tower of argent, rising in a fragrant garden of flowering Martian shrubs, purple and saffron. And a girl waiting, at the silver door—a trim, slender girl in white, with blue eyes and hair richly brown.

Thad had seen the white tower many times, on his holiday tramps through the hills about Helion. He had even dared to ask if it could be bought, to find that its price was an amount that he might not amass in many years at his perilous profession. But the girl in white was yet only a glorious dream. . . .

Gigantic claws seemed to reach out of empty air.

THE strangeness of interplanetary space, and the somber mystery of it, pressed upon him like an illimitable and deserted ocean. The sun was a tiny white disk on his right, hanging between rosy coronal wings; his native Earth, a bright greenish point suspended in the dark gulf below it; Mars, nearer, smaller, a little ocher speck above the shrunken sun. Above him, below him, in all directions was vastness, blackness, emptiness. Ebon infinity, sprinkled with far, cold stars.

Thad was alone. Utterly alone. No man was visible, in all the supernal vastness of space. And no work of man—save the few tools of his daring trade, and the glittering little rocket bolted to the black iron behind him. It was terrible to think that the nearest human being must be tens of millions of miles away.

On his first trips, the loneliness had been terrible, unendurable. Now he was becoming accustomed to it. At least, he no longer feared that he was going mad. But sometimes. . . .

Thad shook himself and spoke aloud, his voice ringing hollow in his huge metal helmet:

"Brace up, old top. In good company, when you're by yourself, as Dad used to say. Be back in Helion in a week or so, anyhow. Look up Dan and 'Chuck' and the rest of the crowd again, at Comet's place. What price a friendly boxing match with Mason, or an evening at the televiewer theater?

"Fresh air instead of this stale synthetic stuff! Real food, in place of these tasteless concentrates! A hot bath, instead of greasing yourself!

"Too dull out here. Life—" He broke off, set his jaw.

No use thinking about such things. Only made it worse. Besides, how did he know that a whizzing meteor wasn't going to flash him out before he got back?

HE drew his right arm out of the bulging sleeve of the suit, into its ample interior, found a cigarette in an inside pocket, and lighted it. The smoke swirled about in the helmet, drawn swiftly into the air filters.

"Darn clever, these suits," he murmured. "Food, smokes, water generator, all where you can reach them. And darned expensive, too. I'd better be looking for pay metal!"

He clambered to a better position; stood peering out into space, searching for the tiny gleam of sunlight on a meteoric fragment that might be worth capturing for its content of precious metals. For an hour he scanned the black, star-strewn gulf, as the sputtering rocket continued to drive him forward.

"There she glows!" he cried suddenly, and grinned.

Before him was a tiny, glowing fleck, that moved among the unchanging stars. He stared at it intensely, breathing faster in the helmet.

Always he thrilled to see such a moving gleam. What treasure it promised! At first sight, it was impossible to determine size or distance or rate of motion. It might be ten thousand tons of rich metal. A fortune! It would more probably prove to be a tiny, stony mass, not worth capturing. It might even be large and valuable, but moving so rapidly that he could not overtake it with the power of the diminutive Millen rocket.

He studied the tiny speck intently, with practised eye, as the minutes passed—an untrained eye would never have seen it at all, among the flaming hosts of stars. Skilfully he judged, from its apparent rate of motion and its slow

increase in brilliance, its size and distance from him.

"Must be—must be fair size," he spoke aloud, at length. "A hundred tons, I'll bet my helmet! But scooting along pretty fast. Stretch the little old rocket to run it down."

He clambered back to the rocket, changed the angle of the flaming exhaust, to drive him directly across the path of the object ahead, filled the magazine again with the little pellets of uranite, which were fed automatically into the combustion chamber, and increased the firing rate.

The trailing blue flame reached farther backward from the incandescent orifice of the exhaust. The vibration of the metal sphere increased. Thad left the sputtering rocket and went back where he could see the object before him.

IT was nearer now, rushing obliquely across his path. Would he be in time to capture it as it passed, or would it hurtle by ahead of him, and vanish in the limitless darkness of space before his feeble rocket could check the momentum of his ball of metal?

He peered at it, as it drew closer.

Its surface seemed oddly bright, silvery. Not the dull black of meteoric iron. And it was larger, more distant, than he had thought at first. In form, too, it seemed curiously regular, ellipsoid. It was no jagged mass of metal.

His hopes sank, rose again immediately. Even if it were not the mass of rich metal for which he had prayed, it might be something as valuable—and more interesting.

He returned to the rocket, adjusted the angle of the nozzle again, and advanced the firing time slightly, even at the risk of a ruinous explosion.

When he returned to where he could see the hurtling object before him, he saw that it was a ship. A tapering silver-green rocket-flier.

Once more his dreams were dashed. The officers of interplanetary liners lose no love upon the meteor miners, claiming that their collected masses of metal, almost helpless, always underpowered, are menaces to navigation. That could expect nothing from the ship save a heliographed warning to keep clear.

But how came a rocket-flier here, in the perilous swarms of the meteor belt? Many a vessel had been destroyed by collision with an asteroid, in the days before charted lanes were cleared of drifting metal.

The lanes more frequently used, between Earth, Mars, Venus and Mercury, were of course far inside the orbits of the asteroids. And the few ships running to Jupiter's moons avoided them by crossing millions of miles above their plane.

Could it be that legendary green ship, said once to have mysteriously appeared, sliced up and drawn within her hull several of the primitive ships of that day, and then disappeared forever after in the remote wastes of space? Absurd, of course: he dismissed the idle fancy and examined the ship still more closely.

Then he saw that it was turning, end over end, very slowly. That meant that its gyros were stopped; that it was helpless, drifting, disabled, powerless to avoid hurtling meteoric stones. Had it blundered unawares into the belt of swarms—been struck before the danger was realized? Was it a derelict, with all dead upon it?

EITHER the ship's machinery was completely wrecked, Thad knew, or there was no one on watch. For the controls of a modern rocket-flier are so simple and so nearly automatic that a single man at the bridge can keep a vessel upon her course.

It might be, he thought, that a meteorite had ripped open the hull, allowing the air to escape so quickly that the entire crew had been asphyxiated before any repairs could be made. But that seemed unlikely, since the ship must have been divided into several compartments by air-tight bulkheads.

Could the vessel have been deserted for some reason? The crew might have mutinied, and left her in the life-tubes. She might have been robbed by pirates, and set adrift. But with the space lanes policed as they were, piracy and successful mutiny were rare.

Thad saw that the flier's navigation lights were out.

He found the heliograph signal mirror at his side, sighted it upon the ship, and worked the mirror rapidly. He waited, repeated the call. There was no response.

The vessel was plainly a derelict. Could he board her, and take her to Mars? By law, it was his duty to attempt to aid any helpless ship, or at least to try to save any endangered lives upon her. And the salvage award, if the ship should be deserted and he could bring her safe to port, would be half her value.

No mean prize, that. Half the value of ship and cargo! More than he was apt to earn in years of mining the meteor belt.

With new anxiety, he measured the relative motion of the gleaming ship. It was going to pass ahead of him. And very soon. No more time for speculation. It was still uncertain whether it would come near enough so that he could get a line to it.

Rapidly he unslung from his belt the apparatus he used to capture meteors. A powerful electromagnet, with a thin, strong wire fastened to it, to be hurled from a helix-gun. He set the drum on which the wire was wound upon the metal at his feet, fastened it with its magnetic anchor, wondering if it would stand the terrific strain when the wire tightened.

Raising the helix to his shoulder, he trained it upon a point well ahead of the rushing flier, and stood waiting for the exact moment to press the lever. The slender spindle of the ship was only a mile away now, bright in the sunlight. He could see no break in her polished hull, save for the dark rows of circular ports. She was not, by any means, completely wrecked.

He read the black letters of her name.

Red Dragon.

The name of her home port, below, was in smaller letters. But in a moment he made them out. San Francisco. The ship then came from the Earth! From the very city where Thad was born!

THE gleaming hull was near now. Only a few hundred yards away. Passing. Aiming well ahead of her, to allow for her motion, Thad pressed the key that hurled the magnet from the helix. It flung away from him, the wire screaming from the reel behind it.

Thad's mass of metal swung on past the ship, as he returned to the rocket and stopped its clattering explosions. He watched the tiny black speck of the magnet. It vanished from sight in the darkness of space, appeared again against the white, burnished hull of the rocket ship.

For a painful instant he thought he had missed. Then he saw that the magnet was fast to the side of the flier, near the stern. The line tightened. Soon the strain would come upon it, as it checked the momentum of the mass of iron. He set the friction brake.

Thad flung himself flat, grasped the wire above the reel. Even if the mass of iron tore itself free,

he could hold to the wire, and himself reach the ship.

He flung past the deserted vessel, behind it, his lump of iron swung like a pebble in a sling. A cloud of smoke burst from the burned lining of the friction brake, in the reel. Then the wire was all out; there was a sudden jerk.

And the hard-gathered sphere of metal was gone—snapped off into space. Thad clung desperately to the wire, muscles cracking, tortured arms almost drawn from their sockets. Fear flashed over his mind; what if the wire broke, and left him floating helpless in space?

IT held, though, to his relief.

He was trailing behind the ship. Eagerly he seized the handle of the reel; began to wind up the mile of thin wire. Half an hour later, Thad's suited figure bumped gently against the shining hull of the rocket. He got to his feet, and gazed backward into the starry gulf, where his sphere of iron had long since vanished.

"Somebody is going to find himself a nice chunk of metal, all welded together and equipped for rocket navigation," he murmured. "As for me—well, I've simply *got* to run this tub to Mars!"

He walked over the smooth, refulgent hull, held to it by magnetic soles. Nowhere was it broken, though he found scars where small meteoric particles had scratched the brilliant polish. So no meteor had wrecked the ship. What, then, was the matter? Soon he would know.

The *Red Dragon* was not large. A hundred and thirty feet long, Thad estimated, with a beam of twenty-five feet. But her trim lines bespoke design recent and good; the double ring of black projecting rockets at the stern told of unusual speed.

A pretty piece of salvage, he reflected, if he could land her on Mars. Half the value of such a ship, unharmed and safe in port, would be a larger sum than he dared put in figures. And he *must* take her in, now that he had lost his own rocket!

He found the life-tubes, six of them, slender, silvery cylinders, lying secure in their niches, three along each side of the flier. None was missing. So the crew had not willingly deserted the ship.

He approached the main air-lock, at the center of the hull, behind the projecting dome of the bridge. It was closed. A glance at the dials told him there was full air pressure within it. It had, then, last been used to *enter* the rocket, not to leave it.

THAD opened the exhaust valve, let the air hiss from the chamber of the lock. The huge door swung open in response to his hand upon the wheel, and he entered the cylindrical chamber. In a moment the door was closed behind him, air was hissing into the lock again.

He started to open the face-plate of his helmet, longing for a breath of air that did not smell of sweat and stale tobacco smoke, as that in his suit always did, despite the best chemical purifiers. Then he hesitated. Perhaps some deadly gas, from the combustion chambers....

Thad opened the inner valve, and came upon the upper deck of the vessel. A floor ran the full length of the ship, broken with hatches and companionways that gave to the rocket rooms, cargo holds, and quarters for crew and passengers below. There was an enclosed ladder that led to bridge and navigating room in the dome above. The hull formed an arched roof over it.

The deck was deserted, lit only by three dim blue globes, hanging from the curved roof. All seemed in order—the fire-fighting equip-

ment hanging on the walls, and the huge metal patches and welding equipment for repairing breaks in the hull. Everything was clean, bright with polish or new paint.

And all was very still. The silence held a vague, brooding threat that frightened Thad, made him wish for a moment that he was back upon his rugged ball of metal. But he banished his fear, and strode down the deck.

Midway of it he found a dark stain upon the clean metal. The black of long-dried blood. A few tattered scraps of cloth beside it. No more than bloody rags. And a heavy meat cleaver, half hidden beneath a bit of darkened fabric.

Mute record of tragedy! Thad strove to read it. Had a man fought here and been killed? It must have been a struggle of peculiar violence, to judge by the dark spattered stains, and the indescribable condition of the remnants of clothing. But what had he fought? Another man, or some thing? And what had become of victor and vanquished?

He walked on down the deck.

The torturing silence was broken by the abrupt patter of quick little footsteps behind him. He turned quickly, nervously, with a hand going instinctively to his welding arc, which, he knew, would make a fairly effective weapon.

IT was merely a dog. A little dog, yellow, nondescript, pathetically delighted. With a sharp, eager bark, it leaped up at Thad, pawing at his armor and licking it, standing on its hind legs and reaching toward the visor of his helmet.

It was very thin, as if from long starvation. Both ears were ragged and bloody, and there was a long, unhealed scratch across the shoulder, somewhat inflamed, but not a serious wound.

The bright, eager eyes were alight with joy. But Thad thought he saw fear in them. And even through the stiff fabric of the Osprey suit, he felt that the dog was trembling.

Suddenly, with a low whine, it shrank close to his side. And another sound reached Thad's ears.

A cry, weird and harrowing beyond telling. A scream so thin and so high that it roughened his skin, so keenly shrill that it tortured his nerves; a sound of that peculiar frequency that is more agonizing than any bodily pain.

When silence came again, Thad was standing with his back against the wall, the welding arc in his hand. His face was cold with sweat, and a queer chill prickled up and down his spine. The yellow dog crouched whimpering against his legs.

Ominous, threatening stillness filled the ship again, disturbed only by the whimpers and frightened growls of the dog. Trying to calm his overwrought nerves, Thad listened—strained his ears. He could hear nothing. And he had no idea from which direction the terrifying sound had come.

A strange cry. Thad knew it had been born in no human throat. Nor in the throat of any animal he knew. It had carried an alien note that overcame him with instinctive fear and horror. What had voiced it? Was the ship haunted by some dread entity?

FOR many minutes Thad stood upon the deck, waiting, tensely grasping the welding tool. But the nerve-shattering scream did not come again. Nor any other sound. The yellow dog seemed half to forget its fear. It leaped up at his face again, with another short little bark.

The air must be good, he thought, if the dog could live in it.

He unscrewed the face-plate of

his helmet, and lifted it. The air that struck his face was cool and clean. He breathed deeply, gratefully. And at first he did not notice the strange odor upon it: a curious, unpleasant scent, earthly, almost fetid, unfamiliar.

The dog kept leaping up, whining.

"Hungry, boy?" Thad whispered.

He fumbled in the bulky inside pockets of his suit, found a slab of concentrated food, and tossed it out through the opened panel. The dog sprang upon it, wolfed it eagerly, and came back to his side.

Thad set at once about exploring the ship.

First he ascended the ladder to the bridge. A metal dome covered it, studded with transparent ports. Charts and instruments were in order. And the room was vacant, heavy with the fatal silence of the ship.

THAD had no expert's knowledge of the flier's mechanism. But he had studied interplanetary navigation, to qualify for his license to carry masses of metal under rocket power through the space lanes and into planetary atmospheres. He was sure he could manage the ship if its mechanism were in good order, though he was uncertain of his ability to make any considerable repairs.

To his relief, a scrutiny of the dials revealed nothing wrong.

He started the gyro motors, got the great wheels to spinning, and thus stopped the slow, end-over-end turning of the flier. Then he went to the rocket controls, warmed three of the tubes, and set them to firing. The vessel answered readily to her helm. In a few minutes he had the red fleck of Mars over the bow.

"Yes, I can run her, all right," he announced to the dog, which had followed him up the steps, keeping close to his feet. "Don't worry, old boy. We'll be eating a juicy beefsteak together, in a week. At Comet's place in Helion, down by the canal. Not much style—but the eats!

"And now we're going to do a little detective work, and find out what made that disagreeable noise. And what happened to all your fellow-astronauts. Better find out, before it happens to us!"

He shut off the rockets, and climbed down from the bridge again.

When Thad started down the companionway to the officers' quarters, in the central one of the five main compartments of the ship, the dog kept close to his legs, growling, trembling, hackles lifted. Sensing the animal's terror, pitying it for the naked fear in its eyes, Thad wondered what dramas of horror it might have seen.

The cabins of the navigator, calculator, chief technician, and first officer were empty, and forbidding with the ominous silence of the ship. They were neatly in order, and the berths had been made since they were used. But there was a large bloodstain, black and circular, on the floor of the calculator's room.

The captain's cabin held evidence of a violent struggle. The door had been broken in. Its fragments, with pieces of broken furniture, books, covers from the berth, and three service pistols, were scattered about in indescribable confusion, all stained with blood. Among the frightful débris, Thad found several scraps of clothing, of dissimilar fabrics. The guns were empty.

ATTEMPTING to reconstruct the action of the tragedy from those grim clues, he imagined that the five officers, aware of some peril, had gathered here, fought, and died.

The dog refused to enter the room. It stood at the door, looking anxiously after him, trembling and whimpering pitifully. Several times it sniffed the air and drew back, snarling. Thad thought that the unpleasant earthy odor he had noticed upon opening the faceplate of his helmet was stronger here.

After a few minutes of searching through the wildly disordered room, he found the ship's log—or its remains. Many pages had been torn from the book, and the remainder, soaked with blood, formed a stiff black mass.

Only one legible entry did he find, that on a page torn from the book, which somehow had escaped destruction. Dated five months before, it gave the position of the vessel and her bearings—she was then just outside Jupiter's orbit, Earthward bound—and concluded with a remark of sinister implications:

> "Another man gone this morning. Simms, assistant technician. A fine workman. O'Deen swears he heard something moving on the deck. Cook thinks some of the doctor's stuffed monstrosities have come to life. Ridiculous, of course. But what is one to think?"

Pondering the significance of those few lines, Thad climbed back to the deck. Was the ship haunted by some weird death, that had seized the crew man by man, mysteriously? That was the obvious implication. And if the flier had been still outside Jupiter's orbit when those words were written, it must have been weeks before the end. A lurking, invisible death! The scream he had heard. . . .

HE descended into the forecastle, and came upon another such silent record of frightful carnage as he had found in the captain's cabin. Dried blood, scraps of cloth, knives and other weapons. A fearful question was beginning to obsess him. What had become of the bodies of those who must have died in these conflicts? He dared not think the answer.

Gripping the welding arc, Thad approached the after hatch, giving to the cargo hold. Trepidation almost overpowered him, but he was determined to find the sinister menace of the ship, before it found him. The dog whimpered, hung back, and finally deserted him, contributing nothing to his peace of mind.

The hold proved to be dark. An indefinite black space, oppressive with the terrible silence of the flier. The air within it bore still more strongly the unpleasant fetor.

Thad hesitated on the steps. The hold was not inviting. But at the thought that he must sleep, unguarded, while [illegible]ng the flier to Mars, his resolution returned. The uncertainty, the constant fear, would be unendurable.

He climbed on down, feeling for the light button. He found it, as his feet touched the floor. Blue light flooded the hold.

It was filled with monstrous things, colossal creatures, such as nothing that ever lived upon the Earth; like nothing known in the jungles of Venus or the deserts of Mars, or anything that has been found upon Jupiter's moons.

They were monsters remotely resembling insects or crustaceans, but as large as horses or elephants; creatures upreared upon strange limbs, armed with hideously fanged jaws, cruel talons, frightful, saw-toothed snouts, and glittering scales, red and yellow and green. They leered at him with phosphorescent eyes, yellow and purple.

They cast grotesquely gigantic shadows in the blue light. . . .

A COLD shock of horror started along Thad's spine, at sight of those incredible nightmare things. Automatically he flung up the welding tool, flicking over the lever with his thumb, so that violet electric flame played about the electrode.

Then he saw that the crowding, hideous things were motionless, that they stood upon wooden pedestals, that many of them were supported upon metal bars. They were dead. Mounted. Collected specimens of some alien life.

Grinning wanly, and conscious of a weakness in the knees, he muttered: "They sure will fill the museum, if everybody gets the kick out of 'em that I did. A little *too* realistic, I'd say. Guess these are the 'stuffed monstrosities' mentioned in the page out of the log. No wonder the cook was afraid of them. Some of them do look hellishly alive!"

He started a[illegible] the hold, shrinking involuntarily from the armored enormities that seemed crouched to spring at him, motionless eyes staring.

So, at the end of the long space, he found the treasure.

Glittering in the blue light, it looked unreal. Incredible. A dazzling dream. He stopped among the fearful, silent things that seemed gathered as if to guard it, and stared with wide eyes through the opened face-plate of his helmet.

He saw neat stacks of gold ingots, new, freshly smelted; bars of silver-white iridium, of argent platinum, of blue-white osmium. Many of them. Thousands of pounds, Thad knew. He trembled at thought of their value. Almost beyond calculation.

Then he saw the coffer, lying beyond the piled, gleaming ingots —a huge box, eight feet long, made of some crystal that glittered with snowy whiteness, filled with sparkling, iridescent gleams, and inlaid with strange designs, apparently in vermilion enamel.

With a little cry, he ran toward the chest, moving awkwardly in the loose, deflated fabric of the Osprey suit.

BESIDE the coffer, on the floor of the hold, was literally a mountain of flame—blazing gems, heaped as if they had been carelessly dumped from it; cut diamonds, incredibly gigantic; monster emeralds, sapphires, rubies; and strange stones, that Thad did not recognize.

And Thad gasped with horror, when he looked at the designs of the vermilion inlay, in the white, gleaming crystal. Weird forms. Shapes of creatures somewhat like gigantic spiders, and more unlike them. Demoniac things, wickedly fanged, jaws slavering. Executed with masterly skill, that made them seem living, menacing, secretly gloating!

Thad stared at them for long minutes, fascinated almost hypnotically. Three times he approached the chest, to lift the lid and find what it held. And three times the unutterable horror of those crimson images thrust him back, shuddering.

"Nothing but pictures," he muttered hoarsely.

A fourth time he advanced, trembling, and seized the lid of the coffer. Heavy, massive, it was fashioned also of glistening white crystal, and inlaid in crimson with weirdly hideous figures. Great hinges of white platinum held it on the farther side; it was fastened with a simple, heavy hasp of the precious metal.

Hands quivering, Thad snapped back the hasp, lifted the lid.

New treasure in the chest would not have surprised him. He was prepared to meet dazzling wonders

of gems or priceless metal. Nor would he have been astonished at some weird creature such as one of those whose likenesses were inlaid in the crystal.

But what he saw made him drop the massive lid.

A woman lay in the chest—motionless, in white.

IN a moment he raised the lid again; examined the still form more closely. The woman had been young. The features were regular, good to look upon. The eyes were closed; the white face appeared very peaceful.

Save for the extreme, cadaverous pallor, there was no mark of death. With a fancy that the body might be miraculously living, sleeping, Thad thrust an arm out through the opened panel of his suit, and touched a slender, bare white arm. It was stiff, very cold.

The still, pallid face was framed in fine brown hair. The fair, small hands were crossed upon the breast, over the simple white garment.

A queer ache came into his heart. Something made him think of a white tower in the red hills near Helion, and a girl waiting in its fragrant garden of saffron and purple—a girl like this.

The body lay upon a bed of blazing jewels.

It appeared, Thad thought, as if the pile of gems upon the floor had been hastily scraped from the coffer, to make room for the quiet form. He wondered how long it had lain there. It looked as if it might have been living but minutes before. Some preservative. . . .

His thought was broken by a sound that rang from the open hatchway on the deck above—the furious barking and yelping of the dog. Abruptly that was silent, and in its place came the uncanny and terrifying scream that Thad had heard once before, on this flier of mystery. A shriek so keen and shrill that it seemed to tear out his nerves by their roots. The voice of the haunter of the ship.

WHEN Thad came back upon the deck, the dog was still barking nervously. He saw the animal forward, almost at the bow. Hackles raised, tail between its legs, it was slinking backward, barking sharply as if to call for aid.

Apparently it was retreating from something between Thad and itself. But Thad, searching the dimly-lit deck, could see no source of alarm. Nor could the structures upon it have shut any large object from his view.

"It's all right!" Thad called, intending to reassure the frightened animal, but finding his voice queerly dry. "Coming on the double, old man. Don't worry."

The dog had reached the end of the deck. It stopped yelping, but snarled and whined as if in terror. It began darting back and forth, moving exactly as if something were slowly closing in upon it, trapping it in the corner. But Thad could see nothing.

Then it made a wild dash back toward Thad, darting along by the wall, as if trying to run past an unseen enemy.

Thad thought he heard quick, rasping footsteps, then, that were not those of the dog. And something seemed to catch the dog in mid-air, as it leaped. It was hurled howling to the deck. For a moment it struggled furiously, as if an invisible claw had pinned it down. Then it escaped, and fled whimpering to Thad's side.

He saw a new wound across its hips. Three long, parallel scratches, from which fresh red blood was trickling.

Regular scraping sounds came from the end of the deck, where no moving thing was to be seen—

sounds such as might be made by the walking of feet with unsheathed claws. Something was coming back toward Thad. Something that was *invisible!*

TERROR seized him, with the knowledge. He had nerved himself to face desperate men, or a savage animal. But an invisible being, that could creep upon him and strike unseen! It was incredible . . . yet he had seen the dog knocked down, and the bleeding wound it had received.

His heart paused, then beat very quickly. For the moment he thought only blindly, of escape. He knew only an overpowering desire to hide, to conceal himself from the invisible thing. Had it been possible, he might have tried to leave the flier.

Beside him was one of the companionways amidships, giving access to a compartment of the vessel that he had not explored. He turned, leaped down the steps, with the terrified dog at his heels.

Below, he found himself in a short hall, dimly lighted. Several metal doors opened from it. He tried one at random. It gave. He sprang through, let the dog follow, closed and locked it.

Trying to listen, he leaned weakly against the door. The rushing of his breath, swift and regular. The loud hammer of his thudding heart. The dog's low whines. Then —unmistakable scraping sounds, outside.

The scratching of claws, Thad knew. Invisible claws!

He stood there, bracing the door with the weight of his body, holding the welding arc ready in his hand. Several times the hinges creaked, and he felt a heavy pressure against the panels. But at last the scratching sounds ceased. He relaxed. The monster had withdrawn, at least for a time.

When he had time to think, the invisibility of the thing was not so incredible. The mounted creatures he had seen in the hold were evidence that the flier had visited some unknown planet, where weird life reigned. It was not beyond reason that such a planet should be inhabited by beings invisible to human sight.

Human vision, as he knew, utilizes only a tiny fraction of the spectrum. The creature must be largely transparent to visible light, as human flesh is radiolucent to hard X-rays. Quite possibly it could be seen by infra-red or ultra-violet light—evidently it was visible enough to the dog's eyes, with their different range of sensitivity.

PUSHING the subject from his mind, he turned to survey the room into which he had burst. It had apparently been occupied by a woman. A frail blue silk dress and more intimate items of feminine wearing apparel were hanging above the berth. Two pairs of delicate black slippers stood neatly below it.

Across from him was a dressing table, with a large mirror above it. Combs, pins, jars of cosmetic cluttered it. And Thad saw upon it a little leather-bound book, locked, stamped on the back "Diary."

He crossed the room and picked up the little book, which smelled faintly of jasmine. Momentary shame overcame him at thus stealing the secrets of an unknown girl. Necessity, however, left him no choice but to seize any chance of learning more of this ship of mystery and her invisible haunter. He broke the flimsy fastening.

Linda Cross was the name written on the fly-leaf, in a firm, clear feminine hand. On the next page was the photograph, in color, of a girl, the brown-haired girl whose body Thad had discovered in the

crystal coffer in the hold. Her eyes, he saw, had been blue. He thought she looked very lovely—like the waiting girl in his old dream of the silver tower in the red hills by Helion.

The diary, it appeared, had not been kept very devotedly. Most of the pages were blank.

One of the first entries, dated a year and a half before, told of a party that Linda had attended in San Francisco, and of her refusal to dance with a certain man, referred to as "Benny," because he had been unpleasantly insistent about wanting to marry her. It ended:

> "Dad said to-night that we're going off in the *Dragon* again. All the way to Uranus, if the new fuel works as he expects. What a lark, to explore a few new worlds of our own! Dad says one of Uranus' moons is as large as Mercury. And Benny won't be proposing again soon!"

Turning on, Thad found other scattered entries, some of them dealing with the preparation for the voyage, the start from San Francisco—and a huge bunch of flowers from "Benny," the long months of the trip through space, out past the orbit of Mars, above the meteor belt, across Jupiter's orbit, beyond the track of Saturn, which was the farthest point that rocket explorers had previously reached, and on to Uranus, where they could not land because of the unstable surface.

THE remainder of the entries Thad found less frequent, shorter, bearing the mark of excitement: landing upon Titania, the third and largest satellite of Uranus; unearthly forests, sheltering strange and monstrous life; the hunting of weird creatures, and mounting them for museum specimens.

Then the discovery of a ruined city, whose remains indicated that it had been built by a lost race of intelligent, spiderlike things; the finding of a temple whose walls were of precious metals, containing a crystal chest filled with wondrous gems; the smelting of the metal into convenient ingots, and the transfer of the treasure to the hold.

The first sinister note there entered the diary:

> "Some of the men say we shouldn't have disturbed the temple. Think it will bring us bad luck. Rubbish, of course. But one man did vanish while they were smelting the gold. Poor Mr. Tom James. I suppose he ventured away from the rest, and something caught him."

The few entries that followed were shorter, and showed increasing nervous tension. They recorded the departure from Titania, made almost as soon as the treasure was loaded. The last was made several weeks later. A dozen men had vanished from the crew, leaving only gouts of blood to hint the manner of their going. The last entry ran:

> "Dad says I'm to stay in here to-day. Old dear, he's afraid the thing will get me—whatever it is. It's really serious. Two men taken from their berths last night. And not a trace. Some of them think it's a curse on the treasure. One of them swears he saw Dad's stuffed specimens moving about in the hold.
>
> "Some terrible thing must have slipped aboard the flier, out of the jungle. That's what Dad and the captain think. Queer they can't find it.

They've searched all over. Well. . . ."

Musing and regretful, Thad turned back for another look at the smiling girl in the photograph.

What a tragedy her death had been! Reading the diary had made him like her. Her balance and humor. Her quiet affection for "Dad." The calm courage with which she seemed to have faced the creeping, lurking death that darkened the ship with its unescapable shadow.

How had her body come to be in the coffer, he wondered, when all the others were—gone? It had shown no marks of violence. She must have died of fear. No, her face had seemed too calm and peaceful for that. Had she chosen easy death by some poison, rather than that other dreadful fate? Had her body been put in the chest to protect it, and the poison arrested decomposition?

Thad was still studying the picture, thoughtfully and sadly, when the dog, which had been silent, suddenly growled again, and retreated from the door, toward the corner of the room.

The invisible monster had returned. Thad heard its claws scratching across the door again. And he heard another dreadful sound—not the long, shrill scream that had so grated on his nerves before, but a short, sharp coughing or barking, a series of shrill, indescribable notes that could have been made by no beast he knew.

THE decision to open the door cost a huge effort of Thad's will.

For hours he had waited, thinking desperately. And the thing outside the door had waited as patiently, scratching upon it from time to time, uttering those dreadful, shrill coughing cries.

Sooner or later, he would have to face the monster. Even if he could escape from the room and avoid it for a time, he would have to meet it in the end. And it might creep upon him while he slept.

To be sure, the issue of the combat was extremely doubtful. The monster, apparently, had succeeded in killing every man upon the flier, even though some of them had been armed. It must be large and very ferocious.

But Thad was not without hope. He still wore his Osprey-suit. The heavy fabric, made of metal wires impregnated with a tough, elastic composition, should afford considerable protection against the thing.

The welding arc, intended to fuse refractive meteoric iron, would be no mean weapon, at close quarters. And the quarters would be close.

If only he could find some way to make the thing visible!

Paint, or something of the kind, would stick to its skin. . . . His eyes, searching the room, caught the jar of face powder on the dressing table. Dash that over it! It ought to stick enough to make the outline visible.

So, at last, holding the powder ready in one hand, he waited until a time when the pressure upon the door had just relaxed, and he knew the monster was waiting outside. Swiftly, he opened the door. . . .

THAD had partially overcome the instinctive horror that the unseen being had first aroused in him. But it returned in a sickening wave when he heard the short, shrill, coughing cries, hideously eager, that greeted the opening of the door. And the quick rasping of naked claws upon the floor. *Sounds from nothingness!*

He flung the powder at the sound.

A form of weird horror materialized before him, still half invis-

ible, half outlined with the white film of adhering powder: gigantic and hideous claws, that seemed to reach out of empty air, the side of a huge, scaly body, a yawning, dripping jaw. For a moment Thad could see great, hooked fangs in that jaw. Then they vanished, as if an unseen tongue had licked the powder from them, dissolving it in fluids which made it invisible.

That unearthly, half-seen shape leaped at him.

He was carried backward into the room, hurled to the floor. Claws were rasping upon the tough fabric of his suit. His arm was seized crushingly in half-visible jaws.

DESPERATELY he clung to the welding tool. The heated electrode was driven toward his body. He fought to keep it away; he knew that it would burn through even the insulated fabric of his suit.

A claw ripped savagely at his side. He heard the sharp, rending sound, as the tough fabric of his suit was torn, and felt a thin pencil of pain drawn along his body, where a claw cut his skin.

Suddenly the suit was full of the earthy fetor of the monster's body, nauseatingly intense. Thad gasped, tried to hold his breath, and thrust upward hard with the incandescent electrode. He felt warm blood trickling from the wound.

A numbing blow struck his arm. The welding tool was carried from his hand. Flung to the side of the room, it clattered to the floor; and then a heavy weight came upon his chest, forcing the breath from his lungs. The monster stood upon his body and clawed at him.

Thad squirmed furiously. He kicked out with his feet, encountering a great, hard body. Futilely he beat and thrust with his arms against the pillarlike limb.

His body was being mauled, bruised beneath the thick fabric. He heard it tear again, along his right thigh. But he felt no pain, and thought the claws had not reached the skin.

It was the yellow dog that gave him the chance to recover the weapon. The animal had been running back and forth in the opposite end of the room, fairly howling in excitement and terror. Now, with the mad courage of desperation, it leaped recklessly at the monster.

A mighty, dimly seen claw caught it, hurled it back across the room. It lay still, broken, whimpering.

For a moment the thing had lifted its weight from Thad's body. And Thad slipped quickly from beneath it, flung himself across the room, snatched up the welding tool.

In an instant the creature was upon him again. But he met it with the incandescent electrode. He was crouched in a corner, now, where it could come at him from only one direction. Its claws still slashed at him ferociously. But he was able to cling to the weapon, and meet each onslaught with hot metal.

Gradually its mad attacks weakened. Then one of his blind, thrusting blows seemed to burn into a vital organ. A terrible choking, strangling sound came from the air. And he heard the thrashing struggles of wild convulsions. At last all was quiet. He prodded the thing again and again with the hot electrode, and it did not move. It was dead.

The creature's body was so heavy that Thad had to return to the bridge, and shut off the current in the gravity plates along the keel, before he could move it. He dragged it to the lock through which he had entered the flier, and consigned it to space. . . .

FIVE days later Thad brought the *Red Dragon* into the atmosphere of Mars. A puzzled pilot came aboard, in response to his

signals, and docked the flier safely at Helion. Thad went down into the hold again, with the astonished port authorities who had come aboard to inspect the vessel.

Again he passed among the grotesque and outrageous monsters in the hold, leading the gasping officers. While they marveled at the treasure, he lifted the weirdly embellished lid of the coffer of white crystal, and looked once more upon the still form of the girl within it.

Pity stirred him. An ache came in his throat.

Linda Cross, so quiet and cold and white, and yet so lovely. How terrible her last days of life must have been, with doom shadowing the vessel, and the men vanishing mysteriously, one by one! Terrible—until she had sought the security of death.

Strangely, Thad felt no great elation at the thought that half the incalculable treasure about him was now safely his own, as the award of salvage. If only the girl were still living. . . . He felt a poignantly keen desire to hear her voice.

Thad found the note when they started to lift her from the chest. A hasty scrawl, it lay beneath her head, among glittering gems.

"This woman is not dead. Please have her given skilled medical attention as soon as possible. She lies in a state of suspended animation, induced by the injection of fifty minims of zeronel.

"She is my daughter, Linda Cross, and my sole heir.

"I entreat the finders of this to have care given her, and to keep in trust for her such part of the treasure on this ship as may remain after the payment of salvage or other claims.

"Sometime she will wake. Perhaps in a year, perhaps in a hundred. The purity of my drugs is uncertain, and the injection was made hastily, so I do not know the exact time that must elapse.

"If this is found, it will be because the lurking thing upon the ship has destroyed me and all my men.

"Please do not fail me.

Levington Cross."

Thad bought the white tower of his dreams, slim and graceful in its Martian garden of saffron and purple, among the low ocher hills beside Helion. He carried the sleeping girl through the silver door where the girl of his dreams had waited, and set the coffer in a great, vaulted chamber. Many times each day he came into the room where she lay, to look into her pallid face, and feel her cold wrist. He kept a nurse in attendance, and had a physican call daily.

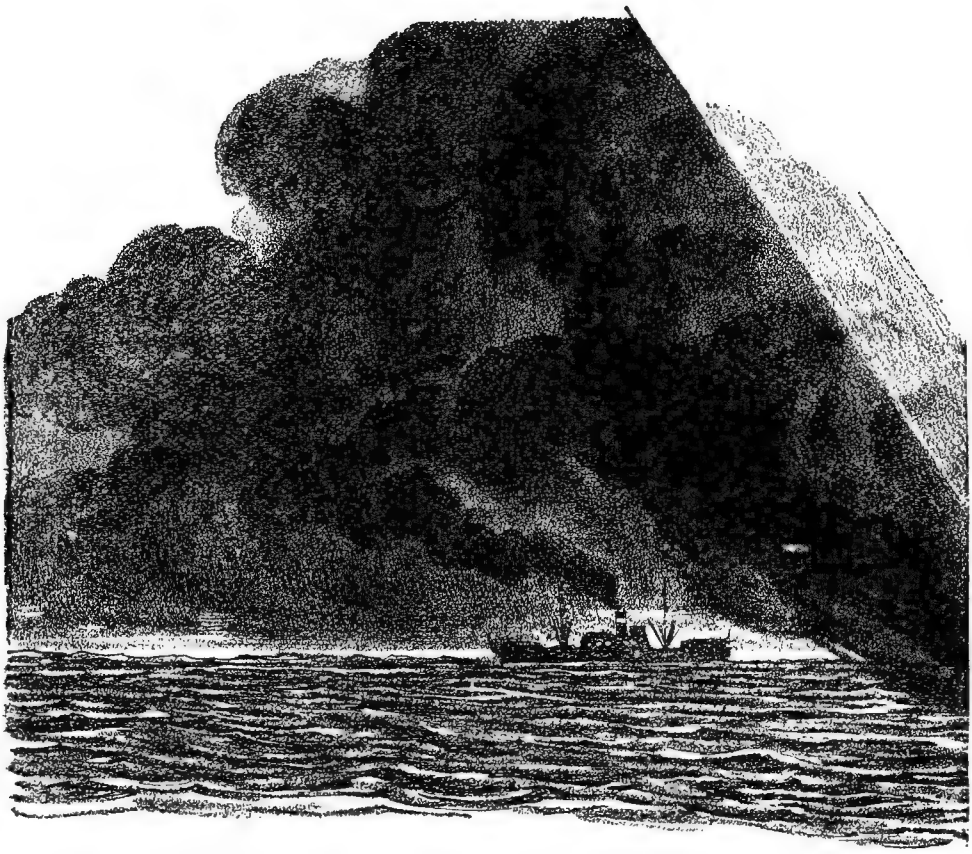
A long Martian year went by.

LOOKING in his mirror one day, Thad saw little wrinkles about his eyes. He realized that the nervous strain and anxiety of waiting was aging him. And it might be a hundred years, he remembered, before Linda Cross came from beneath the drugs' influence.

He wondered if he should grow old and infirm, while Linda lay still young and beautiful and unchanged in her sleep; if she might awake, after long years, and see in him only a feeble old man. And he knew that he would not be sorry he had waited, even if he should die before she revived.

On the next day, the nurse called him into the room where Linda lay. He was bending over her when she opened her eyes. They were blue, glorious.

A long time she looked up at him, first in fearful wonder, then with confidence, and dawning understanding. And at last she smiled.



Lords of the Stratosphere

A Complete Novelette

By Arthur J. Burks

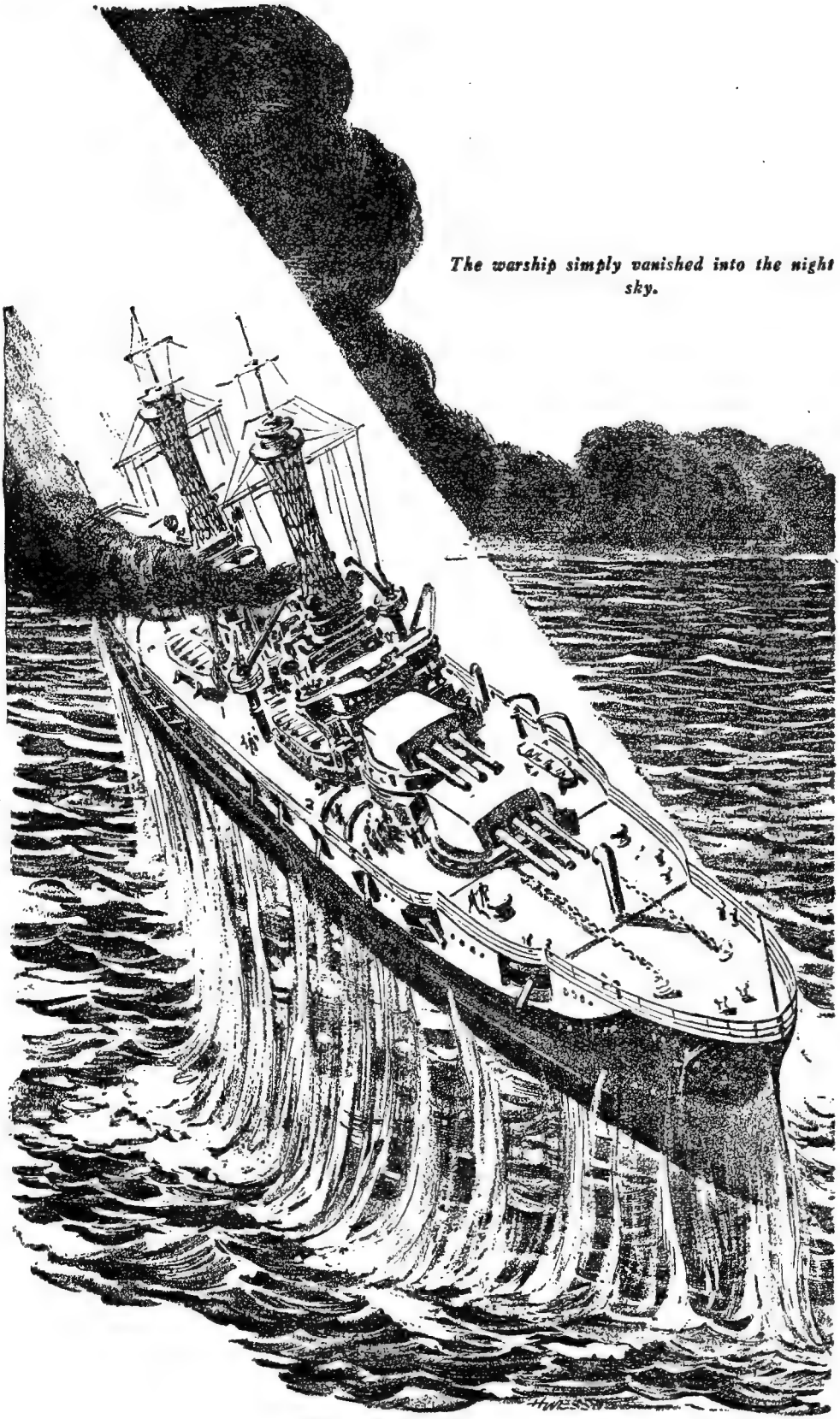
CHAPTER I

The Take-off

IT seemed only fitting and proper that the greatest of all leaps into space should start from Roosevelt Field, where so many great flights had begun and ended. Fliers whose names had rung—for a space—around the world, had landed here and been received by New York with all the pomp of visiting kings. Fliers had departed here for the lands of kings, to be received by them when their journeys were ended.

Of course Lucian Jeter and Tema Eyer were disappointed that Franz Kress had beaten them out in the race to be first into the stratosphere above fifty-five thousand feet. There was a chance that Kress would fail, when it would be the turn of Jeter and Eyer. They didn't wish for his failure, of course. They were sportsmen as well as scientists; but

High into air are the great New York buildings lifted by a ray whose source no telescope can find.



The warship simply vanished into the night sky.

they were just human enough to anticipate the plaudits of the world which would be showered without stint upon the fliers who succeeded.

"At least, Tema," said Jeter quietly, "we can look his ship over and see if there is anything about it that will suggest something to us. Of course, whether he succeeds or fails, we shall make the attempt as soon as we are ready."

"Indeed, yes," replied Eyer. "For no man will ever fly so high that another may not fly even higher. Once planes are constructed of unlimited flying radius . . . well, the universe is large and there should be no end of space flights for a long time."

Eyer, the elder of the two partner scientists, was given sometimes to quiet biting sarcasm that almost took the hide off. Jeter never minded greatly, for he knew Eyer thoroughly and liked him immensely. Besides they were complements to each other. The brain of each received from the other exactly that which he needed to supplement his own knowledge of science.

They had one other thing in common. They had been "child prodigies," but contrary to the usual rule, they had both fulfilled their early promise. Their early precocious wisdom had not vanished with the passing of childhood. Each possessed a name with which to conjure in the world of science. And each possessed that name by right of having made it famous. And yet —they were under forty.

Jeter was a slender athletic chap with deep blue eyes and brown hair. His forehead was high and unnaturally white. There was always a still sort of tenseness about him when his mind was working with some idea that set him apart from the rest of the world. You felt then that you couldn't have broken his preoccupation in any manner at all —but that if by some miracle you did, he would wither you with his wrath.

Tema Eyer was the good nature of the partnership, with a brain no less agile and profound. He was a swart fellow, straight as an arrow, black of eyes — the sort which caused both men and women to turn and look after him on the street. Children took to both men on sight.

The crowd which had come out to watch the take-off of Franz Kress was a huge one—huge and restless. There had been much publicity attendant on this flight, none of it welcome to Kress. Oh, later, if he succeeded, he would welcome publicity, but publicity in advance rather nettled him.

Jeter and Eyer went across to him as he was saying his last words into the microphone before stepping into his sealed cabin for the flight. Kress saw them coming and his face lighted up.

"Lord," he said, "I'm glad to see you two. I've something I must ask you."

"Anything you ask will be answered," said Jeter, "if Tema and I can answer it. Or granted—if it's a favor you wish."

Kress motioned people back in order to speak more or less privately with his brother scientists. His face became unusually grave.

"You've probably wondered — everybody has—why I insist on making this flight alone," he said, speaking just loudly enough to be heard above the purring of the mighty, but almost silent motor behind him. "I'll tell you, partly. I've had a feeling for the last month that . . . well, that things may not turn out exactly as everybody hopes. Of course I'll blaze the way to new discoveries; yes, and I'll climb to a height of around a hundred thousand feet . . . and . . . and. . . ."

Jeter and Eyer looked at each

other. It wasn't like Kress to be gloomy just before doing something that no man had ever done before. He should have been smiling and happy—at least for the movietone cameras—but he wasn't even that. Certainly it must be something unusual to so concern him.

"Tell us, Kress," said Eyer.

Kress looked at them both for several moments.

"Just this," he said at last: "work on your own high altitude plane with all possible speed. If I don't come back . . . take off and follow me into the stratosphere at once."

Had Kress, possessor of one of the keenest scientific minds in the world, taken leave of his senses? "If I don't come back," he had said. What did he expect to do? Fly off the earth utterly? That was silly.

But when the partners looked again at Kress they both had the same feeling. It probably wasn't as silly as it sounded. Did Kress know something he wasn't telling them? Did he really think he might . . . well, might fly off the earth entirely, away beyond her atmosphere, and never return? How utterly absurd! And yet. . . .

"Of course we'll do it," said Jeter. "We'd do it anyway, without word from you. We haven't stopped our own work because of your swiftly approaching conquest of the greater heights. But why shouldn't you come back?"

FOR a moment there was a look of positive dread upon Kress' face.

Then he spoke again, very quietly:

"You know all the stuff that's been written about my flight," he said. "Most of it has been nonsense. How could laymen newspaper reporters have any conception of what I may encounter aloft? They've tried to make something of the recent passage of the Earth through an area of so-called shooting stars. They've speculated until they're black in the face as to the true nature of the recent bombardment of meteorites. They've pictured me as a hero in advance, doomed to death by direct attack from what they are pleased to call —after having invented them— denizens of the stratosphere."

"Yes?" said Jeter, when Kress paused.

Kress toop a deep breath.

"They've come nearer than they hoped for in some guesses," he said. "Of course I don't know it, but I've had a feeling for some time. You know what sometimes happens when a man gets a sudden revolutionary idea? He concentrates on it like all get-out. Then somebody else bursts into the newspapers with the same identical idea, which in turn brings out hordes of claims to the same idea by countless other people. It's no new thing to writers and such-like gentry. They know that when they get such an idea they must act on it at once or somebody else will, because their thoughts on the subject have gone forth and impinged upon the mental receiving sets of others. Well, that's a rough idea, anyway. This idea of denizens of the stratosphere has attacked the popular imagination. You'll remember it broke in the papers *simultaneously,* in thirty countries of the world!"

A cold chill ran down the spine of Tema Eyer. He saw, in a flash, whither Kress' thoughts were tending—and when he saw that, it thrilled him, too, for it seemed to be proof of the very thing Kress was saying.

"You mean," he said hoarsely, "that you too think there may be something up there, something . . .

well, sensate? Some great composite thought which inspires the general dread of stratosphere denizens?"

Kress shrugged. He wouldn't commit himself, being too careful a scientist, but he hadn't hesitated to plant the idea. Jeter and Eyer both understood the thoughts which were teeming in Kress' brain.

"We'll do our part, Kress," said Eyer. Lucian Jeter nodded agreement. Kress gripped their hands tightly—almost desperately, Jeter thought. Jeter was usually the leader where Eyer and himself were concerned and he thought already that he foresaw cataclysmic events.

KRESS climbed into his plane. The vast crowd murmured. They knew he was adjusting everything inside for the days-long endurance test ahead of him. Kress had forgotten nothing. There was even a specially made cylinder, comparable to the globe which Picard had used in his historic balloon ascensions in Europe. This was attached to a parachute which, if the emergency arose, could be dropped. Kress, in the ball, could pass through the sub-arctic cold of the stratosphere if necessity demanded. The ball, if it struck the ocean, would preserve him for a great length of time. It was even equipped with rockets.

This plane was revolutionary. It was, to begin with, carrying a vast load. Kress was taking every conceivable kind of instrument he fancied he might need. There was food as for a long siege.

Jeter shuddered. Why had he thought of the word "siege"?

The great load would be carried without difficulty, however, for this plane was little short of a miracle. Among other things, Kress would be able, in case of fatigue, to set his controls—as at sea a pilot may sometimes lash his wheel—and sleep while his plane mounted on up, and up, in great spirals.

Up beyond fifty-five thousand he hoped to attain a thousand miles an hour velocity. That meant, say, breakfast in New York, lunch in London, tea in Novo-Sibirsk, dinner in Yokohama—as soon as the myriad planes which would follow this one in design and capabilities took off on the trail Kress was blazing.

Jeter sighed at the thought. For several years he had explored little-known sections of the world. He had visited every country. He had entered every port that could be reached from the ocean—and all the time he had felt the Earth shrinking before the gods of speed. The time would soon come when everything on Earth would be commonplace. Then man's urge to go places he hadn't seen before would take him away from the Earth entirely—when he would begin the task of making even the universe shrink to appease the gods of speed. Somehow the thought was a melancholy one.

Now the crowd gave back as Kress speeded up his motor, indicating that he would soon take off. Jeter and Eyer studied the outward outline of Kress' craft. It looked exactly like a black beetle which has just alighted after flight but has not yet quite hidden its wings. It was black, probably because it was believed a black object could be followed easier from the Earth.

There would be many anxious eyes watching that spiraling ship as it grew smaller and smaller, climbing upward.

With a rush, and a spinning of dust in the slipstream, the ship was away. It lifted as easily as a bird and mounted with great speed. It was capable of climbing in wide spirals at a hundred and fifty miles an hour.

A great sigh burst from the thousands who had come to watch history made. For solid hours now they would watch the plane climb, growing smaller, becoming a speck, vanishing. Many curious ones would stay right here until Kress returned, fearful of being cheated of a great thrill. For Kress was to land right here when, and if, he had conquered the stratosphere.

JETER and Eyer wormed their way through the crowd to the road and found their car in a jam of other cars. Without a word they climbed in and drove themselves to their dwelling—combined home and laboratory—in Mineola. There they fell to on their own ship, which was being built piece by piece in their laboratory.

Every half hour or so one or the other would go to the lawn and gaze aloft, seeking Kress.

"He's out of eyesight," said Eyer, the last to go. "Is the telescope set up?"

"Yes, and arranged to cover all the area of sky through which Kress is likely to climb."

At intervals through the night, long after they had ceased work, the partners rose from bed and sought their fellow scientist among the stars. They alternated at this task.

"According to my calculations," said Jeter, when the eastern sky was just paling into dawn, "Kress has now reached a point higher than man has ever flown before, higher than any living—"

Jeter stopped on the word. Both men remembered Kress' last words. Kress, upset or not, properly or improperly, had hinted of living things in the stratosphere—perhaps utterly malignant entities.

It was just here, in the dawning of the first day after Kress' departure, that the dread began to grow on Jeter and Eyer. And during the day they labored like Trojans at their work, as though to forget it.

The world had begun its grim wait for the return of Kress.

They waited all that day . . . and the next . . . and the next!

Then telegraph and radio, at the suggestion of Jeter, instructed the entire civilized world to turn its eyes skyward to watch for the return of Kress.

The world obeyed *that* day . . . and the next . . . *and the next!*

But Kress did not return; nor, so far as the world knew, did any or all of his great airplane.

The world itself began to have a feeling of dread—that grew.

CHAPTER II

The Ghostly Columns

FRANZ KRESS had been gone a week, when all the world knew that he couldn't possibly have stayed aloft that length of time. Yet no word was received from him, no report received from any part of the world that he had returned. Various islands which he might have reached were scoured for traces of him. The lighter vessels of most of the navies of the world joined in the search to no avail. Kress had merely mounted into the sky and vanished.

The world's last word from him had been a few words on the radio-telephone:

"Have reached sixty thousand feet and—"

There the message had ended, as though the speaker, eleven miles above the earth, had been strangled. Yet he didn't drop, as far as anybody in the world knew.

Lucian Jeter and Tema Eyer worked harder than ever, remembering the promise they had made Kress at his take-off. Whatever had happened to him, he seemingly in part had anticipated. And now the

partners would go up, too, seeking information—perhaps to vanish as Kress had vanished. They were not afraid. They shared the world's feeling of dread, but they were not afraid. Of course death would end their labors, but there were many scientists in the world to take up where they might leave off.

There were, for example, Sitsumi of Japan, rumored discoverer of a substance capable of bending light rays about itself to render itself invisible; Wang Li, Liao Wu, Yung Chan, of China—three who had degrees from the world's greatest universities and had added miraculously to the store of knowledge by their own inspired research. These three were patriotically eager to bring China back to her rightful place as the leader in scientific research—a place she had not held for a thousand years. It was generally agreed among scientists that the three would shortly outstrip all their contemporaries.

As Jeter thought of these four men, Orientals all, it suddenly occurred to him to communicate with them. He talked it over with Eyer and decided to send carefully worded cables to all four.

In a few hours he received answers to them:

From Japan: "Sitsumi does not care to communicate." There was a world of cold hostility in the words, Jeter thought, and Eyer agreed with him.

From China came the strangest message of all:

"Wang, Liao and Yung have been cut off from world for past four months, conducting confidential research in Gobi laboratories. Impossible to communicate because area in which laboratories situated in Japanese hands and surrounded by cordon of guards."

Jeter and Eyer stared at each other when the cable had been read and digested.

"Queer, isn't it?" said Eyer.

Jeter didn't answer. That preoccupied expression was on his face, that distant look which no man could erase from his face by any interruption until Jeter had finished his train of thought.

"Queer," thought Jeter, "that Sitsumi should be so snooty and the three Chinese totally unavailable."

THERE were many strange things happening lately, too, and the queer things kept on happening, and in ever-increasing numbers, during the second week of Kress' impossible absence in the stratosphere. Or was he there? Had he ever reached it? Had he—Jeter and Eyer had noticed his utter gloom at the take-off—merely climbed out of sight of the Earth and then slanted down to a dive into the ocean? Maybe he was a suicide. But some bits of wreckage of his plane should have turned up. The plane had many unsinkable parts about it—the parachute ball for instance.

No, the solemn fact remained that Kress had simply flown up and hadn't come down again. It would have sounded silly and absurd if it hadn't been so serious.

And strange stories were seeping into the press of the world.

Out in Wyoming a cattleman had driven a herd of prime steers into the round-up corral at night. Next morning not one of the steers could be found. No tracks led away from the corral. The gates were closed, exactly as they had been left the night before. There had been no cowboys watching the steers, for the corral had always been strong enough to hold the most rambunctious.

The tale of the missing steers hit the headlines, but so far nobody had thought of this disappearance in connection with Kress'. How

could any one? Steers and scientists didn't go together. But it still was strange.

At least so Jeter thought. His mind worked with this and other strange happenings even as he and Eyer worked at top speed.

A young fellow in Arizona told a yarn of wandering about the crater of a meteor which had fallen on the desert thousands of years before. The place wasn't important nor did it seem to have anything to do with the crater or meteors—but the young fellow reported that he had seen a faded white column of light, like the beam of a great searchlight, reaching up into the sky from somewhere on the desert.

When people became amazed at his story he added to it. There had been five columns of light instead of one. The one he had first mentioned had touched the Earth, or had shot up from the Earth, within several miles of his point of vantage. A second glowed off to the northwest, a third to the southwest, a fourth to the southeast, the fifth to the northeast. The first one seemed to "center" the other four —they might have been the five legs of a table, according to their arrangement. . . .

Arrangement! Jeter wondered how that word had happened to come to him.

THE story of the fellow who had seen the columns of light might have been believed if he had stuck to his first yarn of seeing but one. But when he mentioned five . . . well, he didn't have any too good a reputation for veracity and wasn't regarded as being overly bright. Besides, he had stated that the thickness of the columns of light seemed to be the same from the ground as far as his eyes could follow them upward. Everybody knew that a searchlight's beams spread out a bit.

"I wonder," thought Jeter, "why the kid didn't say he saw those five columns move—like a five-legged animal, walking."

Silly, of course, but behind the silliness of the thought Jeter thought there might be something of interest, something on which to work.

The Jeter-Eyer space ship still was not finished—though almost—when the world moved into the third week since the disappearance of Franz Kress.

An Indian in the Southwest had reported seeing one of those columns of light. However, this merited just a line on about page sixteen, even of the newspaper closest to the spot where the redskin had seen the column.

"Eyer," said Jeter at last, "we've got to start digging into newspaper stories, especially into stories which deal with unusually queer happenings throughout the world. I've a hunch that the keys to Kress' disappearance may be found in some of them, or a combination of a great many of them."

"How do you mean, Lucian?"

"Don't you notice that all this queer stuff has been happening since Kress left? It sounds silly, perhaps, but I feel sure that the disappearance of those steers in Wyoming, the story the boy told about the columns of light—yes, all five of them!—and the Indian's partial confirmation of it, are all tied up together with the disappearance of Kress."

EYER started to grin his disbelief, but a look at his partner's tense face stopped him.

"What could want all those steers, Lucian?" said Eyer softly. "I can't think of anything or anybody disposing of such a bunch on such short notice, except a marching army, a marching column of soldier ants, or all the world's

buzzards gathered together at one place. In any case the animals themselves would have created a fuss, would have kicked up so much noise that somebody would have heard. But this story of the steers seems to suggest, or say right out loud—though I know you can't believe everything in the newspapers—that the steers vanished in utter silence."

"Doesn't it also seem funny to you," went on Jeter, "that the vanishing of the herd wasn't discovered until next morning? I've read enough Western stuff to know that a herd always makes noise. Yes, even at night. The cowhands wouldn't have lost a wink of sleep over that. But, listen, Tema, suppose you lived in New York City near some busy intersection which was always noisy, even after midnight—and all the noise suddenly stopped. Would you sleep right on through it?"

"No, I'd wake up—unless I were drunk or doped."

"Yet nobody seems to have wakened at that ranch when—and it must have happened—the herd stopped making any noise whatever. The utter silence *should* have wakened seasoned cowhands. It didn't. Why? What happened to them that they slept so soundly they heard nothing?"

Eyer did not answer. It wasn't the first time he had been called upon to hear Jeter think out loud.

"It all ties up somehow," repeated Jeter, "and I intend to find out how."

But he didn't find out. Strange stories kept appearing. The three Chinese scientists still had not communicated with the outside world. The chap out in Arizona had now so elaborated on his yarn that nobody believed him and the public lost interest—all save Jeter, who was on the trail of a queer idea.

Nothing happened however until near the end of the third week after Kress' disappearance.

Then, out of a clear sky almost, Kress came back.

He came down by parachute, without the ball in which he should have sealed himself. His return caused plenty of comment. There was good reason. He had been gone the impossibly long period of three weeks.

He was dead—but *had* been for less than seventy-two hours!

His body was frozen solid.

It landed on the roof of the Jeter-Eyer laboratory; had he been alive he couldn't possibly have maneuvered his chute to land him on such a small place.

The partners stared at each other. It seemed strange to them indeed that Kress should have come back to land on the roof of the two who had promised to follow him into the stratosphere if he didn't return.

Very strange indeed.

He had returned, though, releasing Jeter and Eyer from their promise. Strangely enough that fact made them all the more determined to go. And while the newspaper reporters went wild over Kress' return, the partners started making additional plans.

CHAPTER III

Strange Levitation

"IN two days we'll be ready, Tema," said Lucian Jeter quietly. "And make no mistake about it; when we take off for the stratosphere we're going to encounter strange things. Nobody can tell me that Kress' plane actually flew three weeks! And where did it come down? Why didn't Kress use the parachute ball? Where is it? I'll wager we'll find answers to plenty of those questions—if we live!"

"If we live?" repeated Eyer. "You mean—?"

"You know what happened to Kress? Or rather you know the result of what happened to him?"

"Sure."

"Why should we be immune? I tell you, Eyer, we're on the eve of something colossal, awe-inspiring—perhaps catastrophic."

Eyer grinned. Jeter grinned back at him. If they knew they flew inescapably to death they still would have grinned. They had plenty of courage.

"We'd better go into town for a meeting with newspaper people," went on Jeter. "You know how things go in the news; there are probably plenty of stories which for one reason or another have not been published. Maybe the law has clamped down on some of them. I've a feeling that if everything were told, the whole world would be frightened stiff. And you notice how quickly the papers finished with the Kress thing."

Eyer knew, all right. The papers had broken the story of the return in flaming scareheads. Then the thing had come to a full stop. It was significant that no real satisfactory explanation had been offered by any one. The papers had, on their own initiative, tried to communicate with Sitsumi, and the three Chinese scientists, and had failed all around. Sitsumi did not answer, denied himself to representatives of the American press in Japan, and crawled into an impenetrable Oriental shell. The three Chinese could not answer, according to advices from Peking, because they could not be located.

Jeter called the publisher of the leading newspaper for a conference.

"Strange that you should have called just now," said the publisher, "for I was on the point of calling you and Eyer and inviting you to a conference to be held this evening at my office in Manhattan."

"What's the purpose of your conference? Who will attend?"

"I—I—well, let us say I had hoped to make you and Eyer available to all interviewers on the eve of your flight into the stratosphere."

Jeter hesitated, realizing that the publisher did not wish to tell everything over the telephone.

"We'll be right along, sir," he said.

IT took an hour for them to reach the publisher's office. Wires had plainly been pulled, too, for a motorcycle escort joined them at the Queensboro Bridge and led them, sirens screaming, to their meeting with George Hadley, the publisher.

They looked at each other in surprise when they were admitted to the meeting.

Hadley's huge offices were packed. The mayor was there, the police commissioner, the assistant to the head of Federal Secret Service. The State Governor had sent a representative. All the newspapers had their most famous men sitting in. Right in this one big room was represented almost the entire public opinion of the United States. American representatives of foreign newspapers were there. And there wasn't a smile on a single face.

It was beginning to be borne in upon everybody that the Western Hemisphere was in the grip of a strange unearthly malady—almost an *other*-earthly malady, but what was it?

Hadley nodded to the two scientists and they took the seats he indicated.

Hadley cleared his throat and spoke.

"We have here people who represent the press of the world," he said. "We have men who control billions in money. I don't know

how many of you have thought along the same lines as I have, but I feel that after I have finished speaking most of you will. First, there are certain news stories which, for reasons of policy, never reach the pages of our papers. I shall now tell you some of them. . . ."

The whole crowd shifted slightly in its chairs. There was a strained leaning forward. Grave faces went whiter as they anticipated gripping announcements.

"All the strange things have not been happening in the United States, gentlemen," said Hadley. "That young fellow who reported seeing the columns of light in Arizona—you remember?—"

There was a chorus of nods.

"He probably told the exact truth, as far as he knew it. But it isn't only in Arizona that it has been seen—those columns I mean. Only there is just one column—not five. It has since been reported in Nepal and Bhutan, in Egypt and Morocco and a dozen other places. But in the cases of such stories emanating from foreign countries, a congress of publishers has withheld the facts, not because of their strangeness but because of the effect they might have on the public sanity. In Nepal, for example, the column of light rested for a moment on an ancient temple, and when the light vanished the temple also had vanished, with everybody in it at the time for worship! Rumor had it that some of the worshipers were later found and identified. They appear to have been scattered over half of Nepal—and every last one was smashed almost to a pulp, as though the body had been dropped from an enormous height."

A concerted gasp raced around the assemblage. Then silence again, while the pale-faced Hadley went on with his unbelievable story.

"A MAD story comes from the heart of the *terai,* in India. I don't know what importance to give this story since the only witnesses to the phenomenon were ignorant natives. But the column of light played into the *terai*—and tigers, huge snakes, buffalo and even elephants rose bodily over the treetops and vanished. They started up slowly—then disappeared with the speed of light."

"Were crushed animals later found in the jungle?" asked Jeter quietly.

Hadley turned his somber eyes on the questioner. Every white face, every fearful eye, also turned toward Jeter.

And Hadley nodded.

"It's too much to be coincidence," he said. "The crushed and broken bodies in Nepal and India—of course they aren't so far apart but that natives in either place might have heard the story from the other—but I am inclined to believe in the inner truth of the stories in each case."

Hadley turned to the two scientists. There were other scientists present, but the fact that Jeter and Eyer, who were so soon to follow Kress into the stratosphere—and eternity?—held the places of honor near the desk of the spokesman, was significant.

"What do you gentlemen think?" asked Hadley quietly.

"There is undoubtedly some connection between the two happenings," said Jeter. "I think Eyer and myself will be able to make some report on the matter soon. We will take off for the stratosphere day after to-morrow."

"Then you think the same thing I do?" said Hadley. "If that is so, can't you start to-morrow? God knows what may happen if we delay longer—though what two of you can do against something which appears to blanket the earth,

and strikes from the heavens, I don't know. And yet, the fate of your country may be in your hands."

"We realize that," said Jeter, while Eyer nodded.

Hadley opened his mouth to make some other observation, then closed it again, tightly, as a horrible thing happened.

The conference was being held on the tenth floor of the Hadley building. And just as Hadley started to speak the whole building began to shake, to tremble as with the ague. Jeter turned his eyes on the others, to see their faces blurred by the vibration of the entire building.

Swiftly then he looked toward the windows of the big room.

Outside the south windows he witnessed an unbelievable thing. Out there was a twelve-story building, and its lighted windows were moving—not to right or left, but straight up! The movement gave the same impression which passing windows give to one in an elevator. Either that other building was rising straight into the air, or the Hadley building was sinking into the Earth.

"QUICK, Hadley!" yelled Jeter. "To the roof the fastest way possible!"

Even as Jeter spoke every last light in the building across the way went out. Jeter knew then that it was the other building that was moving—and that electrical connection with the earth had been severed.

Hadley led the way to the roof, four stories above. Fortunately this was an old building and they didn't have to wait to travel a hundred floors or so. The whole conference followed at the heels of Hadley, Jeter and Eyer.

They reached the roof at top speed.

They were first conscious of the cries of despair, of disbelief, of horror, which rose from the street canyons below them. But they forgot these the next instant at what they saw.

The Vandercook building, the twelve-story building whose lights Jeter had seen moving, was rising bodily, straight out of the well which had been built around it. From the building came shrieks and cries of mortal terror. Even as the conference froze to horrified immobility, many men and women stepped to the ledges of those darkened windows and plunged out in their fear.

"God!" said Hadley.

"It's just as well," said Jeter in a far-away voice, "they haven't a chance anyway!"

"I know," replied Hadley. "God, Jeter, isn't there something we can do?"

"I hope to find something," said Jeter. "But just now I'm afraid we are helpless."

The Vandercook building continued to rise. It did not totter; it simply rose in its entirety, leaving the gaping hole into which, decades ago, it had been built. It rose straight into the sky, apparently of its own volition. No rays of light, no supernatural agencies could be seen or fancied. The utterly impossible was happening. A building was a-wing.

Jeter and Eyer looked at each other with protruding eyes.

THEN they looked back at the Vandercook, whose base now was on a level with the roof of the Hadley building.

"See?" said Hadley. "Not so much as a brick falls from the foundation. It's—it's—ghastly."

Jeter would never forget the screams of mortal terror which came from the lips of the doomed who had been working late in the

Vandercook building—for, horror piled upon horror, those who had sought to escape calamity did not fall to Earth at all, but, at the same speed of the rising building, traveled skyward with it, human flies outside those leering dark windows.

Then, free of New York's skyline, the flying building was gone with a rush. A thousand feet above New York's tallest building, the Vandercook changed direction and moved directly into the west.

The conference watched it go. . . .

"Commissioner," Jeter yelled at the police chief of Manhattan, "get word out at once for all lights to be put out in the city! Hurry! Radio would be fastest."

In ten minutes Manhattan was a darkened, silent city . . . and now the conference could see why Jeter had asked for all lights to be extinguished.

Five thousand feet aloft, directly over the Hudson River, the Vandercook building now hung motionless—and all eyes saw the thin column of light. It came down from the dark skies from a vast distance, widening to encompass the top of the Vandercook building.

The Vandercook building might almost have been a mouse caught in the talons of some unbelievable night-hawk.

As though some intellect had just realized the significance of New York's sudden darkness; as though that intellect had realized that the column was ordinarily invisible because of Manhattan's brilliant incandescents, and now was visible in the darkness—the column of light snapped out. . . .

"God Almighty! May the Lord of Hosts save the world from destruction!"

From New York's canyons, from the roof of the Hadley building, came the great composite prayer.

A whistling shriek, growing second by second into enormous proportions, came out of the west, above the Hudson.

CHAPTER IV

Frantic Scheming

THERE was no mistaking the meaning of that whistling shriek. Whatever agency had held the Vandercook building aloft had now released its uncanny grip on the building, and thousands of tons of brick and mortar, of stone and steel, were plunging down in a mass from five thousand feet above the Hudson. The same force had also released the ill-fated men and women who had been carried aloft with the building. And there must have been hundreds of people inside the building.

It fell as one piece, that great building. It didn't topple until it had almost reached the river and its shrieking plunge became meteor-like, the sound of its fall monstrous beyond imagining. The conference above the Hadley building fancied they could feel the outward rush of air displaced by the falling monster—and drew back in fear from the edge of the roof.

The Vandercook struck the surface of the Hudson and an uprush of geysering water for a few seconds blotted the great building from view. Then all Manhattan seemed to shudder. Most of it was perhaps fancy, but thousands of frightened Manhattanites saw that fall, heard the whistling, and felt the trembling of immovable Manhattan.

The great columns of water fell back into the turbulent Hudson which had received the plunging building. Not so much as a wooden desk showed above the surface as far as any one could see from shore. Not a soul had been saved. Shrieks of the doomed had never stopped from the moment the Van-

dercook building had started its mad journey aloft.

Jeter whirled on Hadley.

"Will you see that all my suggestions are carried out, Hadley?" he demanded.

Hadley, face gray as ashes, nodded.

From Manhattan rose the long abysmal wailing of a populace just finding its voice of fear after a stunning, numbing catastrophe.

"I'll do whatever you say, Jeter," said Hadley. "We all agreed before the arrival of Eyer and yourself that your advice would be followed if you chose to give any."

"Then listen," said Jeter, while Eyer stood quietly at his elbow, missing nothing. "Advise the people of New York to quit the city as quietly and in as orderly a manner as possible. Let the police commissioner look after that. Then get word to the leading aviation authorities, promoters and fliers and have them get to our Mineola laboratory as fast as possible. We've kept much of the detail of construction of our space-ship secret, for obvious reasons. But the time has come to forget personal aggrandizement and the world must know all we have learned by our labor and research. Then see that every manufacturing agency capable of even a little of what it will take for the program, is drafted to the work—by Federal statute if necessary—and turn out copies of our plane as quickly as God will let you."

HADLEY'S eyes were bulging. So were those of the others who had crowded close to listen. They seemed to think Jeter had taken leave of his senses, and yet—all had seen the Vandercook building perform the utterly impossible.

Hadley nodded.

"What do you want with the fliers and others at your laboratory?"

"To listen to the details of construction of our space ship. Eyer will hold a couple of classes to explain everything. Then, when we've made things as clear as possible, Eyer and I will take off and get up to do our best to counteract the —whatever it is—that seems to be ruling the stratosphere. We'll do everything possible to hold the influences in check until you can send up other space ships to our assistance."

Hadley stared.

"You speak as though you expected to be up for a long time. Planes like yours aren't made overnight."

"Planes like ours must be made almost overnight—and have you forgotten that Kress was gone for three weeks, and yet had been dead but seventy-two hours when he landed on our roof? Incidentally, Hadley, that fall of his was guided by something or someone. He didn't fall on our roof by chance. He was dropped there, as a challenge to us!"

"That means?" said Hadley hoarsely.

"That everything we do is known to the intelligence of the stratosphere! That every move we make is watched!"

"God!" said Hadley.

Then Hadley straightened. His jaws became firm, his eyes lost their fear. He was like a good soldier receiving orders.

"All the power of the press will be massed to get the country to back your suggestions, Jeter. They seem good to me. Now get back to your ship and leave everything to me. Suppose you do encounter some intelligence in the stratosphere? How will you combat it, especially if it proves inimical—which to-night's horror would seem to prove?"

Jeter shrugged.

"We'll take such armament as we

have. We have several drums of a deadly volatile gas. We have guns of great power, hurling projectiles of great velocity; but I feel all of that will be more or less useless. The intelligence up there—well, it knows everything we know and far more besides, for do any of us know how to strike at the earth from the stratosphere? Therefore our only weapons must be our own intelligence—at least that will be the program for Eyer and me. Later, when your planes which are yet to be built follow us up the sky, perhaps they will be better armed. I hope to be able to communicate information somehow, relative to whatever we find."

Hadley thrust out his hand.

"Good luck," he said simply.

THEN he was gone and Jeter and Eyer were dropping swiftly down in the elevator to the street—to find that the streets of Manhattan had gone mad. The ban on electric lights had been lifted, and the faces of fear-ridden men and women were ghastly in the brilliance of thousands of lights. Traffic accidents were happening on every corner, at every intersection, and there were all too few police to manage traffic.

However, a motorcycle squad was ready to lead the way through the press for Eyer and Jeter—two grim-faced men now, who dared not look at each other, because each feared to show his abysmal fear to the other.

Automobiles raced past on either side of them driven by crazy men and hysterical women.

"Queensboro Bridge will be packed tight as a drum," said Eyer quietly.

Jeter didn't seem to hear. Eyer talked on softly, unbothered by Jeter's silence, knowing that Jeter wouldn't hear a word, that his partner had drawn into himself and was even now, perhaps, visualizing what they might encounter in the stratosphere. Eyer talked to give shape to his own thoughts.

A world gone mad, a world that fled from the menace which hung over Manhattan. . . . Jeter hoped that the calm brains of men like Hadley would at least be able to quiet the populace somewhat, else many of them would be self-destroyed, as men and women destroy one another in rushes for the exits during great theater fire alarms.

Fast as they traveled, some of the foremost airmen of the adjoining country had reached Mineola ahead of them. They understood that many of them had arrived by plane in obedience to word broadcast by Hadley. Hadley was doing his bit with a vengeance.

The partners reached their laboratory.

Their head servant met them at the door.

"A Mr. Hadley frantically telephoning, sir," he said to Jeter.

Jeter listened to Hadley's words—which were not so frantic now, as though Hadley had been numbed by the awful happenings.

"The new bridge between Manhattan and Jersey," said Hadley, "has just been lifted by whatever the unearthly force is. It was pulled up from its very foundations. It was crowded with cars as people fled from New York—and cars and people were lifted with the bridge. Awful irony was in the rest of the event. The great bridge was simply turned, along its entire length—which remained intact during the miracle—until it was parallel with the river and directly above midstream. Then it was dropped into the water."

"No telling how many lives were lost?" asked Jeter.

"No, and hundreds and thousands of lives are being lost every mo-

ment now. Frantic thousands are swamping boats of all sizes in their craze to get away. Dozens of overloaded vessels have capsized and the surface of the river is alive with doomed people, fighting the water and one another. . . ."

JETER clicked up the receiver on the horror, knowing there was nothing he could do. There would be no end to the loss of life until some measure of sanity had been argued into crazed humanity.

All the time he kept wondering.

What was doing all this awful business? He surmised that some anti-gravitational agency was responsible for the levitation of the Vandercook building, but what sort of intelligence was directing it? Was the intelligence human? Bestial? Maniacal? Or was it something from Outside? Jeter did not think the latter could be considered. He didn't believe that any planet, possibly inhabited, was close enough to make a visit possible. At any rate, he felt that there should be some sort of warning. He held to the belief that the whole thing was caused by human, and earthly, intelligence.

But why? The world was at peace. And yet. . . .

Thousands of lives had been snuffed out, a twelve-story building had leaped five thousand feet into the air, and the world's biggest bridge had turned upstream as though turning its back against the mad traffic it had, at the last, been called upon to bear.

Eyer was going over their plane with the visitors, men of intellect who were taking notes at top speed, men who knew planes and were quick to grasp new appliances.

"Have any of you got the whole story now?" Eyer asked.

A half dozen men nodded.

"Then pass your knowledge on to the others. Jeter and I must get ready to be off. Every minute we delay costs untold numbers of lives."

Willing hands rolled their ship out to their own private runway, while Jeter and Eyer made last minute preparations. There was the matter of food, of oxygen necessary so far above the Earth, of clothing. All had been provided for and their last duties were largely those of checking and rechecking, to make sure no fatal errors in judgment had been made.

Eyer was to fly the ship in the beginning.

A small crowd watched as the partners, white of face now in the last minutes of their stay on Earth —which they might never touch again in life—climbed into their cabin, which was capable of being sealed against the cold of the heights and the lack of breathable oxygen.

Nobody smiled at them, for the world had stopped smiling.

Nobody waved at them, for a wave would have been frivolous.

Nobody cheered or even shouted —but the two knew that the best wishes, the very hopes for life, of all the land, went with them into the ghastly unknown.

CHAPTER V

Into the Void

THEIR watches and the clock in the plane were synchronized with Hadley's time, which was Eastern Standard, and as soon as the plane had reached eight thousand feet altitude, Jeter spoke into the radiophone and arranged for a connection with the office of Hadley.

Hadley himself soon spoke into Jeter's ear.

"Yes, Jeter?"

"See that someone is always at your radiophone to listen to us. I'll

keep you informed of developments as long as possible. Everything is running like clockwork so far. How is it with you?"

"Two additional buildings, older buildings of the city, have been lifted some hundreds of feet above ground level, then dropped back upon their own foundations, to be broken apart. Many lives lost despite the fact that the city will be deserted within a matter of hours. It seems that the—shall we say enemy?—is concentrating only on old buildings."

"Perhaps they wish to preserve the new ones," said Jeter quietly.

"What? Why?"

"For their own use, perhaps; who knows? Keep me informed of every eventuality. If the center of force which seems to be causing all this havoc shifts in any direction, advise us at once."

"All right, Jeter."

Jeter broke the connection temporarily. Hadley could get him at any moment. A buzzer would sound inside the almost noiseless cabin when anyone wished to contact him over the radiophone.

Eyer was concentrating on the controls. The plane was climbing in great sweeping spirals. Its speed was a hundred and fifty miles an hour. Their air speed indicator was capable of registering eight hundred miles an hour. They hoped to attain that speed and more, flying on an even keel above ninety thousand feet.

Both Eyer and Jeter were perfect navigators. If, as they hoped, they could reach ninety thousand or more, they could cross the whole United States in four hours or less. They could quarter the country, winged bloodhounds of space, seeking their quarry.

Jeter studied the sky above them through their special telescopes, seeking some hint of the location of the point of departure of that devastating column of light. He could think of no ray that would nullify gravitation—yet that column of light had been the visual manifestation that the thing had somehow been brought about.

If this were true, was the enemy vulnerable? Was his base of attack capable of being destroyed or crippled if anything happened to the column of light? There was no way of knowing—yet. A search of the sky above Manhattan failed to disclose any visible substance from which the light beam might emanate. That seemed to indicate some unbelievable height. Yet, Kress must have reached that base. Else why had he been destroyed and sent back to Jeter and Eyer as a challenge?

JETER'S mind went back to Kress. Frozen solid . . . but that could have been caused by his downward plunge through space. And what had happened to Kress' plane? No word had been received concerning it up to the time of the Jeter-Eyer departure. Had the "enemy" taken possession of it?

The whole thing seemed absurd. Nobody knew better than Jeter that he was working literally and figuratively in the dark. He was doing little better than guessing. He felt sure of but one thing, that the agency which was wreaking the havoc was a human one, and he was perfectly willing to match his wits and Eyer's against any human intelligence.

Jeter slipped into the cushioned seat beside Eyer.

The altimeter registered fifteen thousand feet. New York was just a blur against the abysmal darkness under their careening wings.

"You've never ventured an opinion, Tema," said Jeter softly, "even to me."

Eyer grinned.

"Who knows?" he said. "It may

all be just the very latest thing in aerial attack. If so, what country or coalition of countries harbor designs against our good Uncle Sam? Japan? China?"

"How do you explain the Vandercook incident? The bridge thing? The rise and fall of the other skyscrapers?"

"Some substance or ray capable of being controlled and directed. It creates a field, of any size desired, in which gravitation is—well, shall we say erased? Then any solid which is thus made weightless could be lifted by the two good hands of a strong man, or even of a weak one. How does that check with your guessing?"

Jeter shook his head ruefully.

"I've arrived at the same conclusions as yourself, Tema," he said. "I know we're all guessing. I know we're probably climbing off the Earth on a wild-goose chase from which we haven't a chance of returning alive. I know we're a pair of fools to think of matching a few drums of gas and a bunch of popguns against the equipment of an enemy capable of moving mountains—but what else is there to do?"

"Nothing," said Eyer cheerfully, "and I've got a feeling that you and I will manage to acquit ourselves with credit."

The radiophone buzzer sounded.

Hadley was speaking.

"One of the very latest types of battle-wagons," he said, "was steaming this way from the open sea outside the Narrows, ordered here to stand by, in case of need, by the Navy Department. She was armed to the minute with the very latest ordnance. She carried a full crew. . . ."

HADLEY paused. Jeter could hear him take a deep breath, like a diver preparing to plunge into icy water. Jeter's spine tingled. He felt he guessed in advance what was to come.

Hadley went on.

The world seemed to spin dizzily as Jeter listened. Out of all the madness only one thing loomed which served for the moment to keep Jeter sane. That was the altimeter, which registered twenty-five thousand feet.

"The battle-wagon — the *U.S.S. Hueber*—was yanked bodily out of the water. It was taken aloft so quickly that it was just a blur. At least this was the way the skipper of a Norwegian steamer, a mile away from the *Hueber,* described it. The warship simply vanished into the night sky. The exact time was given by the Norwegian. Five minutes before midnight. At that moment nothing was happening in New York City—nothing new, that is."

Hadley paused again.

"Go on, man!" said Jeter hoarsely.

"Twenty minutes later the *Hueber* was lowered back into the water, practically unharmed. It had all happened so swiftly that the sailors aboard scarcely realized anything had happened. The skipper of the warship radios that the sensation was like a sudden attack of dizziness. One man died of heart failure. He was the only casualty."

Jeter's eyes began to blaze with excitement, as he spoke.

"Now you can tell the world that the thing which causes the havoc Manhattan is experiencing is not supernatural. It is human—and our people have no fear of human enemies."

"But why was not the warship dropped somewhere, as the buildings have been?" asked Hadley.

"Did you ever," replied Jeter, "hear what is described in the best fiction as a burst of ironic laughter? Well, that what the *Hueber,* as it now stands, or floats, is! But the

enemy made a foolish move and will live to regret it bitterly.

"I wish I could share your sudden confidence," said Hadley. "Conditions here, where public morale is concerned, have become more frightful minute by minute since you left."

Jeter severed the connection.

THE altimeter said thirty-five thousand feet. They were still spiraling upward. Again Jeter surveyed the sky aloft.

The earth below was a blur, save through the telescopes. The two had reached a height less than a third of what they hoped to attain.

Still they could see nothing up above them. They were almost over the "shaft" of atmosphere through which the *Hueber* must have been lifted and lowered. Suppose, Jeter thought, they had accidentally flown into that shaft at exactly the wrong moment? It brought a shudder. Still, Jeter's mind went on, if that had happened they would now, in all likelihood, have been right among the enemy—for gravity in that shaft would not have existed for them, either.

But would they have been lowered back to safety as the *Hueber* and her crew had been?

Believing as he did that the enemy knew everything that transpired within its sphere of influence, Jeter doubted that Eyer and himself would have been so humanely treated.

He had but to remember Kress to feel sure of this.

The altimeter said fifty thousand feet.

CHAPTER VI

Stratosphere Currents

NOW the partner-scientists concentrated on the tremendous task of climbing higher than man had ever flown before. Nobody knew how high Kress had gone, for the only information which had come back had been the corpse of the sky pioneer. Jeter and Eyer hoped to land, too, but to be able to tell others, when they did, what had happened to them.

Somehow, away up here, the affairs of the Earth seemed trivial, unreal. What was the raising of an entire skyscraper—in reality so small that from this height it was difficult to pick out the biggest one through the telescope? What mattered a bridge across the Hudson that was really less than the footprint of an ant at this height?

Still, looking at each other, they were able to attain the old perspectives. Down there people like Jeter and Eyer were dying because of something that struck at them from somewhere up here in the blue darkness.

Their faces set grimly. The plane kept up its constant spiraling. Jeter and Eyer flew the ship in relays. Occasionally they secured the controls and allowed the plane to fly on, untended.

"But maybe we'd better not do too much of that," said Jeter dubiously. "I'm sure we are being observed, every foot of altitude we make. I don't care to run into something up here that will wreck us. Right now, Eyer, if we happened to be outside this sealed cabin instead of inside it, we'd die in less time than it takes to tell about it."

All known records for altitude—the only unknown one being Kress'—had now been broken by Jeter and Eyer. They informed Hadley of this fact.

"A week ago you'd have had headlines," came back Hadley. "Today nobody cares, except that the world looks to you for information about this horror. The enemy is systematically destroying every building in Manhattan which dates

back over eight years. Fortunately, save for the occasional die-hard who never believes anything, there are few deaths at the moment. But we're all waiting, holding our breaths, wondering what the next five minutes will bring forth. Is there any news there?"

How strange it seemed—as the altimeter said sixty-one thousand feet—to hear that voice out of the void. For under the plane there was no world at all, save through the telescope. Perhaps when morning came they would be able to see a little. Picard had reported the world to look flat from a little over fifty thousand feet.

"No news, Hadley," said Jeter. "Except that our plane behaves perfectly and we are at sixty-one thousand feet. Were it not for our turn and bank indicators, our altimeter and air speed instruments, and our navigational instruments, it would be impossible to tell—by looking at least, though we could tell by our shifting weight—whether we were upside down or right side up, on one wing or on an even keel. It's eery. We wouldn't be able to tell whether we were moving were it not for our air speed indicator. There are no clouds. The motor hum seems to be the only thing here—except ourselves of course—to remind us that we really belong down there with you."

THE connection was broken again as Jeter ceased speaking. Things seemed to be marking time on the ground, save for the strange demolitions of the unseen and apparently unknowable enemy. Would they ever really encounter him, or it?

When the sun came out of the east they leveled off at ninety thousand feet. By their reckoning they had scarcely moved in any direction from the spot where they had taken off. Jeter was satisfied that they were almost directly above Mineola. But the world had vanished. The plane rode easily on. Now and again it dipped one wing or the other—and even the veteran aviators felt a thrill of uneasiness. From somewhere up here in this immensity, Franz Kress had dropped to his death. Of course, if it had happened at this height he hadn't lived to suffer.

Or had he? What had been done to him by the—the denizens of the stratosphere?

Jeter sat down beside Eyer. It seemed strange to eat breakfast here, but the sandwiches and hot coffee in a thermos bottle were extremely welcome. They ate in silence, their thoughts busy. When they had made an end, Jeter squared his shoulders. Eyer grinned.

"Well, Lucian," he said, "are we in enemy territory by your calculations? And if so how do you arrive at your conclusions?"

"I'm still guessing, Tema," said Jeter, "but I've a feeling I'm not guessing badly, and. . . . Yes, we're somewhere within striking distance of the enemy, whatever the enemy is."

"What's the next move?"

"We'll systematically cover the sky over an area which blankets New York, Long Island, Jersey City and surrounding territory for a distance of twenty miles. If we're above the enemy, perhaps we can look down upon him. We know he can't be seen from below, perhaps not even from above. If we are below him we'll try to fly into that column of his. What they'll do to us I. . . . You're not afraid to find out, are you?"

Eyer grinned. Jeter grinned back at him.

"What they'll do to us if we fly into them I'm sure I don't know. I don't think they'll kill our motor. If whoever or whatever controls

the light column decides to make us prisoners. . . . Well, we'll hope to have better luck combating them than Kress had."

AND so began that hours-long vigil of quartering the stratosphere over the unmarked area which Jeter had set as a limit. Now and again Hadley spoke to Jeter. Yes, the demolitions were still continuing in Manhattan. Could all telescopes on the ground pick out their space ship? Yes, said Hadley, and a young scientist in New Jersey was constantly watching them. Were they, since sunrise, ever out of his sight? Only when clouds at comparatively low altitudes intervened. However, the sky was unusually clear and it was hoped to keep their plane in sight during the entire day.

"Hadley," Jeter almost whispered, "I'm satisfied we're above the area of force, else we'd have flown into the anti-gravitation field. Get in touch with that Jersey chap by direct personal wire or radiophone if he is equipped with it. See that his watch is set with yours, which is synchronized with ours. Got that?"

"Yes."

"When you've done that give him these instructions: He is never to take his eyes off us for more than a split second at a time—unless someone else takes his place. I doubt if, at this distance, this will work, but it may help us a little. If we become invisible for even the briefest of moments, he is to look at his watch and observe the exact time, even to split seconds. We shall try to follow a certain plan hereafter in quartering the stratosphere, and I shall mark our location on the navigational charts every minute until we hear from this chap, or until we decide nothing is to be accomplished by this trick. Understand?"

"You're hoping that the enemy, while invisible to all eyes, yet has substance. . . ."

"Shut up!" snapped Jeter, but he was glad that Hadley had grasped the idea. It was a slim chance, but such as it was it was worth trying. If the plane were invisible for a time, then it would be proof of some opaque obstruction between the plane and the eye of the beholder on the surface of the Earth. Refraction had to be figured, perhaps. Oh, there were many arguments against it.

The fliers followed the very outer edge of the area above the world they had mapped out as their limit of exploration. This circuit completed, they banked inward, shortening their circuit by about a mile of space. A mile, seen at a distance of ninety thousand feet, would be little indeed.

It was almost midday when they had their first stroke of luck.

The buzzer sounded at the very moment Eyer uttered an ejaculation.

"The Jersey fellow says there is nothing between his lens and your plane to obstruct the view."

"O.K.," retorted Jeter. "At the moment your buzzer sounded our plane suddenly jumped upward. That means an upcurrent of air indicating an obstruction under us. It must however, be invisible."

He severed the connection. His brow was furrowed thoughtfully. He was remembering Sitsumi and his rumored discovery.

They circled back warily. The eyes of both were fixed downward, staring into space. Their jaws were firmly set. Their eyes were narrowed.

And then. . . .

There was that uprush of air again! It appeared to rise from an angle of about sixty degrees. They got the wind against their nose and started a humming dive, feeling in

the alien updraft for the obstruction which caused it.

CHAPTER VII

Invisible Globe

THE buzzer of their radiophone was sounding, but so intent were they on this phenomenon they were facing, they paid it no heed. Their eyes were alight, their lips in firm straight lines of resolve, as they dived down upon the invisible obstruction—whatever it was—from whose surface the telltale updraft came.

It was Eyer who made the suggestion:

"Let's measure it to see what its plane extent is."

"How?" asked Jeter.

"Measure it by following the wind disturbance. We travel in one direction until we lose it. There is one extremity. In a few minutes we can discover exactly how big the thing is. What do you think it is?"

Jeter shook his head. There was no way of telling.

Jeter nodded agreement to Eyer. Then he spoke into the radiophone, telling Hadley what they had found, to which he could give no name.

"The world awaits in fear and trembling what you will have to report, Jeter," said Hadley. "What if you become unable to report, as Kress did?"

"Don't worry. We will or we won't. If we succeed we'll be back. If we fail, send up the other. . . . No, perhaps you hadn't better send up the new planes. But I think Eyer and I have a chance to discover the nature of this strange—whatever-it-is. If you can't contact us, delay twenty-four hours before doing anything. I—well, I scarcely know what to tell you to do. We'll just be shooting in the dark until we know what we're in for. You'll have to contain yourself in patience. What did you want with me?"

"Only to tell you of another strange news dispatch. It gives no details. It merely tells of strange activity around Lake Baikal, beyond the Gobi Desert. Queer noises at night, mysterious cordons of Eurasians to keep all investigators back, strange losses of livestock, foodstuffs. . . ."

Jeter severed connection. There was little need to listen further to something which he couldn't explain yet, in any case.

Eyer, at the controls, banked the plane at right angles and flew on. In shortly less than a minute he banked again.

IN five minutes he turned to Jeter with a queer expression on his face.

"Well," he said, "what's to do about it? What is it? It seems to be some solid substance approximately a quarter mile square. But it can't be true! A solid substance just hanging in the air at ninety thousand feet! It's beyond all imagining!"

"What man can imagine, man can do," replied Jeter. "A great newspaper editor said that, and we're going to discover now just how true it is."

"What's our next move?"

For a long time the partners stared into each other's eyes. Each knew exactly what the other thought, exactly what he would propose as a course of action. Jeter heaved a sigh and nodded his head.

"We're as much in the power of the enemy here as we would be there, or anywhere else. We can't discover anything from here. Set the wheels down!"

"We can't tell anything about the condition of the surface of that stuff. We may crack up."

Jeter had to grin.

"Sounds strange, cracking up at ninety thousand feet, doesn't it? Well, hoist your helicopter vanes and drift down as straight as you can—but be sure and keep your motor idling."

Again they exchanged long looks.

"O.K.," said Eyer, as quietly as he would have answered the same order at Roosevelt Field. "Here we go!"

He pressed a button and the helicopters, set into the surface of the single sturdy wing, snapped up their shafts and began to spin, effectually slowing the forward motion of the plane. Eyer fish-tailed her with his rudder to help cut down speed.

"We can't see the surface of the thing at all, Lucian," said Eyer. "I'll simply have to feel for it."

"Well, you've done that before, too. We can manage all right."

Down they dropped. The updraft was now a cushion directly under them. And then their wheels struck something solid. The plane moved forward a few feet—with a strange sickening motion. It was as though the surface of this substance were globular. First one wheel rose, then dipped as the other rose. The plane came to rest on fairly even keel, and the partners, while the motor idled, stared at each other.

"Well?" said Eyer, a trace of a grin on his face.

"If it'll hold the plane it will hold us. Let's slide into our stratosphere suits and climb out. We have to get close to this thing to see what it is."

"Parachutes?" said Eyer.

Jeter nodded.

"It would simplify matters if the thing happened to tilt over and spill us off, I think," said Jeter, matching Eyer's grin with one of his own. "I can't think with any degree of equanimity of plunging ninety thousand feet without a parachute."

"I'm not sure I'd care for it *with* one," said Eyer.

THEY were soon in the tight-fitting suits which were customarily used by fliers who climbed above the air levels at which it was impossible for a human being to breathe without a supply of oxygen in a container. Their suits were sealed against cold. Set in their backs were oxygen tanks capable of holding enough oxygen for several hours. Over all this they fastened their parachutes.

Then, using a series of doors in order to conserve the warmth and oxygen inside their cabin, they let themselves out, closing each successive door behind them, until at last they faced the last door—and the grim unknown. They glanced at each other briefly, and Jeter's hand went forth to grasp the mechanism of the last door. Eyer stood at his side. Their eyes met. The door swung open.

They stepped down. The surface of this stratosphere substance was slippery smooth. Now that they stood on its surface they could sense something of its profile. Movement in any direction suggested walking on a huge ball. The queer thing was that they could feel but could not see. It was like walking on air. Their plane appeared to be suspended in midair.

For a moment Jeter had an overpowering desire to grab Eyer, jerk him back to the plane, and take off at top speed. But they couldn't do that, not when the world depended upon them. Had Kress encountered this thing? Perhaps. How must he have felt? He had been alone. These two were moral support for each other. But both were acutely remembering how Kress had come back.

And his plane? They'd perhaps discover what had happened to that, too.

Eyer suddenly slipped and fell, as though he had been walking on a carpet which had been jerked from under his feet. From his almost prone position he looked up at Jeter. Jeter dropped to his knees beside him. Their covered hands played over the surface of their discovery, to find it smooth as glass. As though with one thought they placed their heads against it, right ears down, to listen. But the whole vast field seemed to be dead, lifeless. And yet—a solid it was, floating here in space—or just hanging. It seemed to be utterly motionless.

"There should be a way of discovering what this is, and why, and how it is controlled if an intelligence is behind it." Jeter spelled out the words in the sign language they had both learned as boys.

Eyer nodded.

THEY walked more warily when they had, traveling slowly and hesitantly, gone more than a hundred feet from their plane. They kept it in sight by constantly turning to look back. It was now several feet above them. No telling what might happen to them at any moment, and the plane was an avenue of escape.

They didn't wish to take a chance on stepping off into the stratosphere—and eternity.

"It's like an iceberg of space," said the fingers of Jeter. "But let's go back and look it over to the other side of the plane. We have to keep the plane in sight and work from it as a base. And say, what sort of sensations have you had about this surface we're standing on?"

Jeter could see Eyer's shudder as he asked the question. Slowly the fingers of his partner spelled out the answer.

"I've a feeling of eyes boring into my back. I sense that the substance under us is malignant, inimical. I have the same feeling with every step I take, as though the unseen surface were endowed with arms capable of reaching out and grabbing me."

"I feel it, too," said Jeter's fingers. "But I'm not afraid of fingers in the usual sense. I don't think of hands strangling us, or ripping us to shreds, but of questing—well, call them tentacles, which may clasp us with gentleness even, and absorb us, and annihilate us!"

Now the two faced each other squarely. Now they did not try to hide that their fear was an abysmal feeling, horrible and devastating.

"Let's get back to the plane and take off. We haven't a chance."

They clasped hands again and started running back, their plane their goal. Before they reached it they would change their minds, for they were not ordinarily lacking in courage—but so long as they ran both had the feeling of being pursued by malignant entities which were always just a step behind, but gaining.

They slipped on the smooth surface and fell sprawling. Each felt, when he fell, that he must rise at once, with all his speed, lest something grasp him and hold him down forever. It was a horrible trapped feeling, and yet. . . .

They had but to look at each other to see that they were free. Nothing gripped their feet to hold them back. Of course the way was slippery, but no more so than an icy surface which one essays in ordinary shoes. What then caused their fear?

THE plane, so plainly visible there ahead and above, was like a haven of refuge to them. They panted inside their helmets and their breath misted the glass of their masks. But they stumbled on,

making the best speed they could under the circumstances.

Perhaps if they took off, and regained their courage, returned to normal in surroundings they knew and understood, they could come back and try again, after having heard each other's voices. The silence, the sign manual, the odd, awesome sensations, all combined to rob them of courage. They must get it back if they were to succeed. And they had been away from the plane for almost an hour. Hadley would be waiting for some news.

The plane was twenty yards away—and almost at the same time Eyer and Jeter saw something queer about it. At first it was hard to say just what it was.

They rushed on. They were within ten yards of the plane when a wail of anguish was born—and died—in two soundproof helmets. There was no questioning the fact that the plane had settled into the surface of the field.

The plane was invisible below the tops of the landing wheels, as though the plane were sinking into invisibility, slowly dissolving from the bottom.

"Understand?" Jeter's fingers almost shouted. "Understand why we felt the desire to keep moving? This field is alive, Eyer, and if we stand still it will swallow us just as it is swallowing our plane! Let's get in fast; maybe we can still pull free from the stuff and take off."

They were racing against time and in the heart of each was the feeling that whatever they did, their efforts would be hopeless. Still, the spinning propeller of their plane gave them strength to hope.

They went through the succession of doors as rapidly as they dared. Once in the comfort of their cabin they doffed their stratasphere suits with all possible speed. Jeter was the first free. He jumped to the controls and speeded up the motor. In a matter of seconds it was revving up to a speed which, had it been free, would have pulled the plane along at seven hundred miles an hour at the height at which they were.

But the plane did not move!

JETER slowed the motor, then started racing it fast, trying to jerk the fuselage free of the imbedded wheels, but they would not be released. Both men realized that the wheels had sunk from sight while they had been delayed coming through the succession of doors—that the plane had sunk until the invisible surface gripped the floor of the fuselage.

Perspiration beaded the faces of both men. Eyer managed a ghastly grin. Jeter's brow was furrowed with frantic thought as he tried to imagine a way out.

"If we could somehow cut our landing gear free," began Jeter, "but—"

"But it's too late, Lucian," said Eyer quietly. "Look at the window."

They both looked.

Countless fingers of shadowy gray substance were undulating up the surface of the window, like pale angleworms or white serpents of many sizes, trying to climb up a pane of glass.

"Well," said Jeter, "here we are! You see? Outside we can see nothing. Inside we begin to see a little, and what good will it do us?"

Eyer grinned. It was as though he lighted a cigarette and nonchalantly blew smoke rings at the ceiling, save that they dared not use up any of their precious oxygen by smoking.

Their fear had left them utterly when it would have been natural for them to be stunned by it.

CHAPTER VIII

Cataclysmic Hunger

EYER thrust out his hand to cut the motor. Jeter stayed it.

"I've an idea," he said softly; "let it run. We'll learn something more about the sensitiveness of this material."

The motor was cut to idling. The plane scarcely trembled now in the pull of the motor, so firmly was she held in the grip of the shadowy, vague tentacles. A grim sort of silence had settled in the cabin. The faces of the two partners were dead white, but their eyes were fearless. They had come aloft to give their lives if need be. They wouldn't try to get them back now. Besides, what use was there?

Jeter paused for a moment in thought.

Then he began to examine some of their weapons. The only one by which they could fire outside the plane—due to the necessity of keeping the cabin closed to retain oxygen—was the rapid firer on the wing. This could be depressed enough to fire downward at an angle of forty-five degrees. Jeter hesitated for a moment.

He looked at Eyer. Eyer grinned.

"It can't bring death to us any sooner," he said. "Let her go!"

Jeter tripped the rapid firer and held it for half a minute, during which time three hundred projectiles, eight inches long by two inches in diameter, were poured into the invisible surface. The bullets simply accomplished nothing. It was almost as though the field had simply opened its mouth to catch thrown food. There was no movement of the field, no jarring, no vibration. Nor did the plane itself tremble or shake. Jeter had to stop the rapid firer because its base, the plane, was now so firmly fixed that the recoil might kick the gun out of its mount.

Now the partners sat and looked out through the windows of unbreakable glass, watching the work of those tentacular fingers.

"How does it feel, Tema, to be eaten alive?" asked Jeter.

"Have you radiophoned Hadley about what's happening to us?"

"No," replied Jeter. "It would frighten the world half out of its wits. Besides, what can we say has caught us? We don't know."

"And what are we going to do about it?"

"WE'RE going to wait. I've a theory about some of this. We know blamed well that, except for the most miraculous luck, you couldn't have set the plane down on this field without it slipping off again. Well, there's only one answer to that: the rubbery resilience of the surface. It must have given a little to hold the plane—and us when we walked on it. What does that mean? Simply that we were seen and the field made usable for us by some intelligence. That intelligence watches us now. It saved our lives for some reason or other. It didn't destroy us when were were afoot out there. It isn't destroying us now. It's swallowing us whole—and for some reason. Why? That we'll have to discover. But I think we can rest easy on one thing. We're not to be killed by this swallowing act, else we'd have been dead before now."

"Have you any idea what this stuff is?"

"Yes, but the idea is so wild and improbable that I'm reluctant to tell you what I guess until I know more. However, if it develops that we are to die in this swallowing act, then I'll give you a tip—and it will probably knock you off your pedestal. But the more I think of it the more certain I am that the

whole thing is at least a variation of my idea. And the brains behind it, if my guess proves even approximately correct, will be too great for us to win mastery except by some miraculous accident favoring us—and true miracles come but seldom in these days."

"No? What do you call this?"

Jeter shrugged.

With many ports all around the cabin, all fitted with unbreakable glass, it was possible for the partners to see out in all directions. The tentacle fingers had now climbed up to a height sufficient to smother both windows. The fuselage was about half swallowed.

"I can almost hear the stuff sigh inwardly with satisfaction as it takes us in," said Eyer.

"I have the same feeling. There's a peculiar sound about it, too; do you hear it?"

They listened. The sound which came into the cabin was such a sound as might have been heard by a man inside a cylinder lying on the bottom of a still pond. A whisper that was less than a whisper—a *moving* whisper. In it were life and death, and grim terror.

AND then—remembering that contact with the propeller would shatter it, Tema cut the switch—the propeller stopped, the motor died, and utter silence, in the midst of an utter absence of vibration, possessed the comfortable little cabin. It was hard to believe. The cabin was a breath of home. It *was* a home. And it was being swallowed by some substance concerning which Eyer had no ideas at all and Jeter but a growing suspicion.

The plane sank lower and lower. The surface of the field was now almost to the top of the cabin doors. Most of the windows had been erased, but it made no particular difference in the matter of light. Jeter had put out his hand to snap on the lights, but stayed it when he saw that light came through to them.

Moment by moment the mystery of the swallowing deepened. It was like sinking into a snow bank. There was a sensation of smothering, though it was not uncomfortable because the cabin itself was self-sufficient in all respects to maintain life for a long period of time.

It was like sinking slowly into the depths of the sea.

The last port on the sides of the plane was erased. Now the two sat in their chairs and stared up at the ceiling, and at the glass-protected ports there. It was grim business. They almost held their breath as they waited.

At last those blurred tentacles began to creep across the lowest of the ceiling ports. Faster they came, and faster. In a few minutes every port was covered with a film of the weird stuff.

"It may be a foot deep above us," said Jeter. "I don't think we'll be able to tell how thick any bit of the stuff is. The surface of the field may be ten feet above our heads right now. Well, Tema, old son, we're prisoners as surely as though we were locked in a chrome steel vault a thousand feet underground. We can't go anywhere, or come back if we go there. We're prisoners, that's all—and all we can do is wait."

Eyer grinned.

Jeter began nonchalantly to slip off his helmet and goggles. He doffed his flying coat. In a short time the two might have been sitting over liquor and cigars in their own library at Mineola.

"Expecting company?" asked Eyer.

"Most emphatically," replied Jeter. "Company that is an unknown quantity. Company that will

be wholly and entirely interesting."

So they waited. They could now feel themselves sinking faster into the substance. They settled on an even keel, however, but more speedily than before, as though the directing intelligence behind all these had tired of showing them his wonders and was eager to get on with the business of the day.

Eyer happened to look down at one of the ports in the floor of the cabin.

"Good God!" he yelled. "Lucian!"

HE was pointing. His face had gone white again. His eyes were bulging. Jeter stared down into the floor ports—and gasped.

"I expected it, but it's a shock just the same, Tema," he said softly. "Get hold of yourself. You'll need all your faculties in a minute or two."

Through the ports they found themselves staring down all of twenty feet upon a milky white globe, set inside the greater, softer globe through which they were passing, like a kernel in a shell.

The plane was oozing through the "rind" which protected the strange globe below against the cold and discomfort of the stratosphere.

"They'd scarcely bring us this far to drop us, would they?" asked Eyer.

He was making a distinct effort to regain control of himself. His voice was normal, his breathing regular—and he had spoken thus to show Jeter that this was so.

"Whether we're to be dropped or lowered is all one to us," he said, "since we can do nothing in either case. Twenty feet of fall wouldn't smash us up much."

"Let's keep our eyes on the ceiling ports and see how this swallowing job is really done."

They alternately looked through the floor ports and the ceiling ports.

Under them the gray mass was crawling backward off the floor ports, leaving them clear. Now all of them were clear. Now the gray stuff began to vanish from the lower ports on either side of the cabin.

"I feel as though we were being digested and cast forth," said Jeter.

The action of the stuff was something like that. It had swallowed them in their entirety and now was disgorging them.

They watched the stuff move off the ports one by one, on either side. The lower ones were free. Then those next above, the gray substance retreating with what seemed to be pouting reluctance. Finally even the topmost ports were clear.

"The drop comes soon," said Eyer.

"Wait, maybe not."

THEY concentrated on the ceiling ports for a moment; but the clinging stuff did not vanish from them. They turned back to look through the floor ports. Right under them was the milky globe whose surface could easily accommodate their plane. If they had needed further proof of some guiding intelligence behind all this, that cleared space was it. They were being deliberately lowered to a landing place through a portion of the "rind" made soft in some mechanical way to allow the weight of their plane to sink through it.

They looked up again. Great masses of the gray substance still clung to the top of their cabin, like sticky tar. The substance was rubbery and lifelike in its resiliency, its tenacious grasp upon the Jeter-Eyer plane. By this means the plane was lowered to the "ground." Jeter and Eyer watched,

fascinated, as the stuff slipped and lost its grip, and slowly retracted to become part of the dome above.

The plane had come through this white roof, bearing its two passengers, and now above them there was no slightest mark to show where they had come forth.

They rested on even keel atop the inner globe which they now could see was attached to the outer globe in countless places.

"I wonder if we dare risk getting out," said Eyer.

"I think so," said Jeter. "Look there!"

A trapdoor, shaped something like the profile of an ordinary milk bottle, was opening in the white globe just outside their plane. Framed in the door was a face. It was a dark face, but it was a human one—and the man's body below that face was dressed as simply, and in almost the same fashion, as were Jeter and Eyer themselves. He wore no oxygen tanks or clothing to keep out the cold.

The partners, lips firmly set, nodded to each other and began to open their doors. Imperturbably the dark man came to meet them.

Still other dark faces emerged from the door.

CHAPTER IX

A Scheme Is Described

THE hands of the two wayfarers into the stratosphere dropped to their weapons as the men came through that door which masked the inner mystery of the white globe.

One of the men grinned. There was a threat in his grin—and a promise.

"I wouldn't use my weapons if I were in your place, gentlemen," he said. "Come this way, please. Sitsumi and The Three wish to see you at once."

Jeter and Eyer exchanged glances. Would it do any good to start a fight with these people? They seemed to be unarmed, but there were many of them. And probably there were many more beyond that door. Certainly this strange globe was capable of holding a small army at least.

Jeter shrugged. Eyer answered it with an eloquent gesture—and the two fell in with those who had come to meet them.

"How about our plane?" said Jeter.

"You need concern yourself with it no longer," replied one. "Its final disposal is in the hands of Sitsumi and The Three."

A cold chill ran along Jeter's spine. There was something too final about the guide's calm reply. Both adventurers remembered again, most poignantly, the fate of Kress.

The leaders stepped through the door. A flight of steps led downward.

Several of the swarthy-skinned folk walked behind Jeter and Eyer. There was no gainsaying the fact that they were prisoners.

Jeter and Eyer gasped a little as they looked into the interior of the white globe. It was of unusual extent, Jeter estimated, a complete globe; but this one was bisected by a floor at its center, of some substance that might, for its apparent lightness, have been aluminum. Plainly it was the dwelling place of these strange conquerors of the stratosphere. It might have been a vast room designed as the dwelling place of people accustomed to all sorts of personal comforts.

On the "floor" were several buildings, of the same material as the floor. It remained to be seen what these buildings were for, but Jeter could guess, he believed, with fair accuracy. The large building in the center would be the central

control room housing whatever apparatus of any kind was needed in the working of this space ship. There were smaller buildings, most of them conical, looking oddly like beehives, which doubtless housed the denizens of the globe.

THE atmosphere was much like that of New York in early autumn. It was of equable temperature. There was no discomfort in walking, no difficulty in breathing. Jeter surmised that at least one of those buildings, perhaps the central one, housed some sort of oxygen renewer. Such a device at this height was naturally essential.

The stairs ended. The prisoners and their guards stopped at floor level.

Jeter paused to look about him. His scientific eyes were studying the construction of the globe. The idea of escape from the predicament into which he and Eyer were plunged would never be out of his head for a moment.

"Come along, you!"

Jeter started, stung by the savagery which suddenly edged the voice of the man who had first greeted him. There was contempt in it—and an assumption of personal superiority which galled the independent Jeter.

He grinned a little, looked at Eyer.

"I wonder if we have to take it," he said softly.

"It seems we might expect a little respect, at least," Eyer grinned in answer.

The guard suddenly caught Jeter by the shoulder.

"I said to come along!"

If the man had been intending to provoke a fight he couldn't have gone about it in any better way. Jeter suddenly, without a change of expression, sent a right fist crashing to the fellow's jaw.

"Don't use your gat, Eyer," he called to his partner. "We may kill a key man who may be necessary to our well-being later on. But black eyes and broken noses should be no bar to efficiency."

Without any fuss or hullabaloo, the dozen or so denizens of the globe who had met the partners closed on them. They came on with a rush. Jeter and Eyer stood back to back and slugged. They were young, with youthful joy in battle. They were trained to the minute. As fliers they took pride in their physical condition. They were outnumbered, but it was a matter of pride with them to demand respect wherever they went. It was also a matter of pride to down as many of the attackers as possible before they themselves were downed.

IT became plain that, though the denizens of the globe were armed with knives, they were not to be used. And it didn't seem they would be needed. The fighters were all muscular, well-trained fighters. But for the most part they fought in the manner of Chinese *ta chuen,* or Japanese ju-jutsu men. They used holds that were bone-breaking and it taxed the pair to the utmost to keep from being maimed by their killing strength.

The swarthy men were men of courage, no doubt about that. They fought with silent ferocity. They blinked when struck, but came back to take yet other blows with the tenacity of so many bulldogs. There was no gainsaying them, it seemed. They were here for the purpose of subduing their visitors and nothing short of death would stop them.

It wasn't courtesy, either, that failure to use knives, for Jeter saw murder looking out of more than one pair of eyes as their two pairs of fists landed on brown faces, smashed noses askew, and started eyes to closing.

"Their leader has them under ab-

solute control—and that's a point for the enemy," Jeter panted to himself as the strain of battle began to tell on him. "They've been instructed, no matter what we do, to bring us to their master or masters alive."

For a moment he toyed with the idea of drawing his weapon and firing pointblank into the enemy. He knew they would be compelled to take lives to escape—and that the lives of all these people were forfeit anyway because of the havoc which had descended upon New York City.

But he didn't make a move for his weapon. It would be sure death if he did, for the others were armed.

Brown men fell before the smashing of their fists. But the end of the fight was a foregone conclusion. Jeter had a bruised jaw. Eyer's nose was bleeding and one eye was closed when the reception committee finally came to close quarters, smothered them by sheer weight of numbers, and made them prisoners. Jeter's right wrist was manacled to Eyer's left with a pair or ordinary steel handcuffs. Their weapons were taken away from them now.

The leader of the committee, panting, but apparently unconcerned over what had happened, motioned the two men to lead the way. He pointed to the large building in the center of the "floor."

"That way," he said, "and I hope Sitsumi and The Three give us permission to throw you out without parachutes or high altitude suits."

"Pleasant cuss, aren't you?" said Eyer. "I don't think you like us."

The man would have struck Eyer for his grinning levity; but at that moment a door opened in the side of the large building and a man in Oriental robes stood there.

"Bring them here at once, Naka!" he said.

THE man called Naka, the leader whom Jeter had first struck, bowed low, with deep respect, to the man in the doorway.

"Yes, O Sitsumi!" he said. As he spoke he sucked in his breath with that snakelike hissing sound which is the acme of politeness in Japan —"that my humble breath may not blow upon you"—and spread wide his hands. "They are extremely low persons and dared lay hands upon your emissaries."

Eyer grinned again.

"I think," he called, "there transpired what might be called a general laying on of hands by all hands."

"I deeply deplore your inclination to levity, Tema Eyer," said the man in the doorway. "It is not seemly in one whose intelligence entitles him to a place in our counsels."

Eyer looked at Jeter. What was the meaning of Sitsumi's cryptic utterance?

"Bring them in," snapped Sitsumi.

Jeter studied the man with interest. He knew instantly who he was and understood why Sitsumi had refused to answer his radio messages to Japan. He couldn't very well have done so in the circumstances. Here, under the broad dome of Sitsumi, was probably the greatest scientific brain of the century. Jeter saw cruelty in his eyes, too; ruthlessness, and determination.

The prisoners were marched into the room behind Sitsumi, who stepped aside, looking curiously at Jeter and Eyer as they passed him. Inside the door, pausing only a moment to glance over the big room's appointments, Jeter turned on Sitsumi.

"Just what do you intend doing

with us, Sitsumi?" he asked. "I suppose it's useless to ask you, also, what the meaning of all this is?"

"I shall answer both your questions, Jeter," said Sitsumi. "Step this way, please. The Three should hear our conference."

They were conducted into a smaller room. Its floors were covered with skins. There were easy chairs and divans. It might have been their own luxuriously appointed rooms at Mineola. At a long table three men—all Orientals—were deeply immersed in some activity which bent their heads absorbedly over the very center of the table. It might have been a three-sided chess game, by their attitudes.

"Gentlemen!" said Sitsumi.

The three men turned.

"My colleagues, Wang Li, Liao Wu and Yung Chan," Sitsumi introduced them. "Without them our great work would have been impossible."

HERE were the three missing Chinese scientists. Jeter and Eyer had seen many pictures of them. Jeter wondered whether their adherence to Sitsumi were voluntary or forced. But it was voluntary, of course. The three brains of these brilliant men could easily have outwitted Sitsumi had they been unwilling to associate themselves with him. The three Orientals bowed.

Jeter and Eyer were bidden to take chairs side by side. The guards drew back a little but never took their eyes off the two. Sitsumi ranged himself beside his colleagues at the table.

"I'll answer your questions now, gentlemen, in the presence of my colleagues so that you shall know that we are together in what we propose. We wish you to join us. The only alternative is . . . well, you recall what happened to your countryman, Kress? The same, or a similar fate, will be yours if you don't ally yourselves with us."

Jeter and Eyer exchanged glances.

"Just what *are* you doing?" asked Jeter. "I've seen some of the results of your activities, but I can see no reason for them. I would pronounce everything you have done so far to be the acts of madmen."

"We are not mad," said Sitsumi. "We are simply a group of people of mixed blood who deplore the barriers of racial prejudice, for one thing. We are advocates of a deliberately contrived super-race, produced by the amalgamation of the best minds and the best bodies of all races. We ourselves are what the world calls Eurasians. In our youth people patronized us. In Asia we were shunned. We were shunned everywhere by both races from which we trace our ancestry. We are not trying to be avenged upon the world because we have been pariahs. We are not so petty. But by striving until we have become the world's four greatest scientists we have proved to our own satisfaction that a mixture of blood is a wholesome thing. This expedition of ours, and its effect so far on New York City, is the result of our years of planning."

"I see no need for wholesale murder. Lecture platforms are open to all creeds, all races. . . ."

Something suggestive of a sneer creased Sitsumi's lips. The Three did not change expression in the least.

"PEOPLE do not listen to reason. They listen to force. We will use force to make them listen, in the end, to reason—backed in turn by force, if you like. We have settled on New York from which to begin our conquest

of the world because it is the world's largest, richest, most representative city. If we control New York we control the wealth of the North American continent, and therefore the continent itself. Our destruction of buildings in New York City serve a twofold purpose. It prepares the inhabitants to listen to us later because, seeing what we are capable of doing, they will be afraid not to. Our efficiency is further shown in our destruction of the old out-of-date buildings, chosen for destruction simply because they are obsolete. The New York City of our schemes will be a magic city. . . ."

"But what is your purpose, in a few words?" insisted Jeter.

"The foundation of a world government; the destruction of the mentally deficient; the scientific production of a mixed race of intellectuals, comparable to, but greater than, that of ancient Greece, which was great because it was a human melting pot."

"How are you going to do it—after you've finished your grandstand plays?" said Eyer.

Sitsumi stared at Eyer, his eyes narrowing. Eyer was making his dislike entirely too plain. Jeter nudged him, but the question had been asked.

"With this space ship—and others which are building," replied Sitsumi. "Haven't you guessed at any of our methods?"

"Yes," said Jeter, "I know you are the rumored inventor of a substance which is invisible because light rays are bent around it instead of passing through, yet the result is as though they actually passed through. I judge that the shell, or skin, of this stratosphere ship is composed of this substance, whose formula of construction is your secret. Light rays passing around it would render it invisible, yet would make the beholding eye seem to see in a straight line as usual, disregarding refraction."

Sitsumi nodded. The Three nodded with him, like puppets. But their eyes were glowingly alive.

"You are right. Are you further interested? If you have no interest in our theories there is little need to pursue our plans further, where you are concerned."

"We are interested, of course," said Jeter. "We are interested in your theories, without committing ourselves to acceptance of them; and we are naturally interested in saving our lives. Let us say then, for the moment, that we do not refuse to join you."

CHAPTER X

How It Came About

"YOU will have twenty-four hours in which to decide whether to join us," was Sitsumi's ultimatum. "We would not allow you five minutes were it not that our cause would be benefited by the addition of your scientific knowledge."

Sitsumi did not repeat the alternative. Remembering Kress, Jeter and Eyer did not need to ask him. There was but one alternative—death—a particularly horrible one. That Sitsumi and the Three would not hesitate was amply proved. Already they were guilty of the death of thousands. They were in deadly earnest with their scheme for a world government.

Jeter and Eyer were kept shackled together, and were, in addition, chained to the floor of the main room of the white globe with leg irons. Their keys were in the hands of Naka, whose hatred of Jeter for hitting him on the jaw was so malevolent it fairly glowed from his eyes like sparks shot forth.

Food was brought them when asked for. It wasn't easy to partake

of it, because their manacled hands had to be moved together, which made it extremely awkward.

Jeter and Eyer set themselves the task of trying to figure some way out in the twenty-four hours of life still left them if they failed. That Hadley, down in New York City, and all the best minds who were cooperating with Jeter and Eyer in their mad effort to avert world catastrophe, would make every effort to come to their assistance by sending up the planes which must even now be nearing completion, they hadn't the slightest doubt.

Would they arrive in time? Even if they did, was there anything they could possibly do to save themselves? Surely this space ship must be vulnerable. Else why did it climb so high into the stratosphere? It was far beyond the reach of ordinary planes. High trajectory projectiles had slight chance of hitting it, even if it were visible. What then was its vulnerability, which this hiding seemed to indicate? They must know within twenty-four hours.

So they sat side by side, watching events unfold. The Three talked mandarin. Eyer, for all his levity, was a man of unusual attainments. He understood mandarin, for one thing—a fact which even Jeter did not know at first. The Chinese never seemed even to consider that either of them might know the tongue. Chinese seldom found foreigners who did comprehend them. In only so much were The Three in the least bit careless.

Eyer strained his ears to hear everything which passed between Sitsumi and the Three. Both men listened to any chance words in English or French on the part of all hands within the globe which might give them a hint.

And in those twenty-four hours the sky-scientists learned much.

THEY conversed together, when they spoke of important matters which they wished hidden from their captors, out of the corners of their mouths after the method of criminals. They used it with elaborate unconcern. They might have seemed to be simply staring into space at such moments, dreading approaching death perhaps, and simply twiddling their fingers. But by each other every word was clearly heard.

"That last outburst of Sitsumi's explains a lot of the reported activity in the Lake Baikal region, beyond the Gobi," swiftly dropped from Jeter's lips. "The materials which Sitsumi uses in the preparation of his light-ray-bending substance are found near there somehow. And that means that the Japanese guards—which may be Eurasian guards, after what Sitsumi told us—and employees of this unholy crowd, are busily engaged in the preparation of other space ships."

"Does this thing seem to have any armament?" asked Eyer.

Jeter signified negation with a swift movement of his head.

"Their one weapon seems to be the apparatus which causes that ray. You know, the ray which lifts buildings, pulling them up by the roots."

"Have you any idea what it is?"

"Yes. That last stuff of the Three which you translated for me gives me a clue. At first I thought that they had perfected some substance, perhaps with unknown electrical properties, which nullified gravity. But that won't prove out. If the ray simply nullified gravity, the buildings down there, while weightless, would not rise as they did. They might sway if somebody breathed against them. A midget might lift one with his finger; but they wouldn't fly skyward as they did—and do!"

For a moment the partners ceased their whispering and talked together naturally to disarm suspicion. The fact that the space ship and its ruthless denizens still engaged in the awful work of devastation was amply being proved. In the main room it was possible, through the use of telescopes and audiphones—set into the walls so that they were invisible, yet enabled any one in the room to see everything, and hear everything that transpired on the far earth below—to keep close watch on the work of the destroyers. Anything close enough could be seen with the naked eye through the walls of the globe.

NOW the space ship was systematically destroying buildings the length and breadth of Manhattan Island. The river-front buildings were destroyed in a single sweep, from north to south, of the ghastly ray. Farther back from the Hudson, however, after the water-front buildings had been reduced to mere piles of rubble, the most beautiful, most modern buildings were left standing.

"Can't you just imagine those beautiful structures filled with the monsters created by the genius of Sitsumi and the Three—and their as yet unknown lieutenants back at Lake Baikal?"

Eyer gritted his teeth. His hands closed atop the table at which they were seated. The knuckles went white with the strain. The lips of both men were white. They realized to the full the dreadful responsibility which they had assumed. They knew how abysmally hopeless was their chance of accomplishing anything. And without some gigantic effort being made, the world as they knew it would be destroyed. In its place would be a race of strange beings, of vengeful hybrids endowed from birth with the will to conquer, or destroy utterly.

"You were speaking of the levitating ray," prompted Eyer with a swift change to the sidewise whispering.

"From what you heard I'm sure it is something invented by Liao Wu, Yung Chan and Wang Li. In so much they have an advantage over Sitsumi. I doubt if there is any love lost among them, beyond the fact that they need one another. Sitsumi is master of the substance which bends light rays—and thus is rendered invisible, while the Three are masters of the ray which not only propels this space ship, but is the agency by which buildings are torn up, dropped and destroyed. It's plain to me that this room is the control room of the space ship. The ray is—well, it's as difficult to explain as electricity, and perhaps as simple in its operation. The ray does more than nullify gravity—can be made to reverse gravity! Let's call the ray the gravity inverter for want of a better name. It makes anything it touches literally *fall away from the Earth,* toward the point whence the ray emanates!"

"And if we were to obtain control of the apparatus which harnesses the ray?"

"We lack the knowledge of the Three for its operation. No, we've got to find some simpler solution in the brief time we have."

AT this point the partners had been within the white globe about ten hours and they had learned much about it. The inner globe, for example, maintained an even keel, no matter how the space ship as a whole moved on its rays that seemed like table legs. The gyroscopic principle was used. The inner globe was movable within the outer globe, or rind. If for any reason the space ship listed in one

direction or the other, the inner globe, while it rose and fell naturally, remained upright, its floor always level so that, the gyroscope controlling the whole, the central, levitating, ray would always, must always, as it proved, point downward.

Try as they might, the partners could not see how the Three manipulated the ray. They guessed that there were many buttons on the table at which they sat. The table itself was not an ordinary table. What might have been called a fifth leg, squarely under the center of the table, was about three feet square. Through this, Jeter guessed, ran the wires by which they controlled all their activities, machinery to operate which had been installed under the floor in the unseen lower half of the inner globe.

They knew that must remain forever a secret from them.

There was a sudden stir among the Three. Jeter and Eyer turned aside for a moment to peer down upon New York City. They held their breath with horror as they saw the smoking devastation which must have buried thousands of people. The wrecking had been all but complete. Only the finest buildings still stood. Jeter wondered why the falling back of the shattered buildings had not shaken down those which the Sitsumi crowd had not wished to destroy. The repeated shocks must almost have shaken Manhattan Island on its foundations.

They saw what had caused the sudden stiffening of the Three. Sitsumi, busily engaged at something else nearby, quietly approached the Three.

"What is it?" he asked.

"Rescue planes," said Wang Li. "New York City sends six fliers to rescue Jeter and Eyer. New planes. They'll reach us, Sitsumi. We should have thought to destroy all dangerous air ports. A fatal oversight!"

Sitsumi's eyes were grave. He looked at each of the Three in turn.

"God!" said Jeter's whispering lips. "If we could read their minds! If only we could guess what it is they fear, we'd have the secret by which we might destroy them."

"They're vulnerable," said Eyer, "but how?"

"Watch!" said Jeter. "Listen! And here's to those six unknowns coming up to, maybe, get the same dose we're due for! We were closely watched. New York City knows exactly where we vanished in the sky. Those six planes are aiming at us—at a spot in the stratosphere they can't see. And yet, why should Sitsumi and the Three be so fearful? All they have to do is move a half mile in any direction and they'll never find them."

"But to move will interfere with their plans," said Eyer. "Lucian, look at the expressions on their faces! Something tells me they are vulnerable in ways we haven't guessed at. If we knew the secret maybe we could destroy them. We've got to discover their weak spot."

THERE was a long pause while Jeter and Eyer watched the rescue ships come climbing up the endless stairways of the sky. Then Jeter whispered again, guardedly as usual.

"There seems to be nothing we can do. If our friends are able, by some miracle, to do something, you know what that means to us?"

"It means we're as good as dead no matter what happens," replied Eyer. "But we're only two—and there must be a million buried under the debris in New York City alone. If we can do anything at all. . . ."

There he left it. The partners looked at each other. Each read the right answer in the other's eyes. When the showdown came they'd die as cheerfully as they knew how, hoping to the last to do something for the people who must still hope that, somehow, they would cause this bitter cup of catastrophe to pass from them. And there were thousands upon thousands whose blood cried out for vengeance.

The hours sped as the six planes fled upward. To the ears of the partners, through the audiphones, came the stern roaring of their motors. In their eyes they bulked larger and larger as the time fled away.

The sand in the hour-glass was running out. When it was all gone, and the time had come, what could the helpless Jeter and Eyer hope to accomplish?

For an hour they studied the concerned faces of Sitsumi and the Three.

They were fearful of something. What?

CHAPTER XI

To the Rescue

"WHY should we run?" the voice of Sitsumi suddenly rang out in the control room. "Must we admit in the very beginning of our revolution that we are vulnerable? Must we confess the fears to which all humanity is heir? We had not thought ourselves liable to attack, but there still is a way to destroy these upstarts. To your places, everyone! We shall fight these winged upstarts and destroy them!"

The denizens of the space ship were at their stations. Jeter and Eyer could imagine the minions of Sitsumi and the Three, below the floor of the white globe, standing to on platforms about the unseen engines which gave life and movability to this ship of the stratosphere. How many there were of them there was no way of knowing. They had guessed two hundred. There might have been a thousand. It scarcely mattered.

Sitsumi's face was set in a firm mask. He, of all the "lords of the stratosphere," seemed to possess endless courage. His example fired the three.

"What do you plan?" asked Wang Li.

Jeter and Eyer listened with all their ears.

"We have only one weapon in this unexpected emergency," said Sitsumi quietly. "We cannot direct the ray upward or laterally: it is not so constructed. But we can attack with the space ship itself! And remember that so long as our outer rind remains intact and hard we are invisible to attackers."

Jeter and Eyer exchanged glances.

"If only we could find the way to break or soften that outer rind," said Jeter.

"What can we do?" asked Eyer. "If it is impervious to the cold of these heights; if it is so strong that it is impervious to the tremendous pressure inside the globe —which must be kept at a certain degree to maintain human life— what can we do? We tried bullets. We might as well have used peas and pea-shooters. If our friends try bombs they will still be unsuccessful. If only we could somehow open up the outer rind or soften it, so that our friends could see the inner globe and reach it with their bombs!"

Jeter's face was now dead white. His eyes were aglow with excitement.

"Tema," he whispered, "Tema, that's their vulnerability! That's what they fear! They're scared that the outer rind may be broken —which would spell destruction to

the space ship and everybody in it."

"Including us," replied Eyer, "but, anyway—well, what's the odds? We're only two—and with this thing destroyed the nightmare will end. Of course there should be some way to raid the Lake Baikal area and destroy any other ships in the making, besides ferreting out the secret of the invisible substance and the elements of the gravity inverter. If we somehow survive, and this ship is destroyed, that's the next thing to do."

Jeter nodded and signaled Eyer to cease whispering.

THEY devoted their attention now to the six planes. They were coming up in battle formation. They were in plain view and through the telescopes it could be seen that each was armed with bombs of some kind. Useless against the invisible space ship as matters now stood; but what would those bombs do to the inner globe?

It still lacked several hours of the time allowed in the ultimatum to Jeter and Eyer of Sitsumi and the Three, when the six planes leveled off within a couple of miles of the space ship. They knew about where the stratosphere had swallowed up Jeter and Eyer. Now they were casting about for a sign, like bloodhounds seeking the spoor of an enemy.

Jeter and Eyer held their breaths as they watched. Now and again they stole glances at Sitsumi and the Three, who were watching the six planes with the intensity of eagles preparing to dive.

Naka stepped up close to Jeter.

"When the time comes," he said menacingly, "and it apears that we may be in difficulties with the fools who think to thwart Sitsumi and the Three and rescue you, it shall give me great pleasure to destroy you with your own automatic."

"Pleasant fellow," said Eyer. "Shall I smash him, Lucian?"

Jeter shook his head.

"Our friends out there will look after that, Tema," he said in a natural tone of voice. "I'll bet you two to one they get this ship within an hour. Not that a bet will mean anything, as they'll get us, too!"

"Your friends," said Naka, "will be destroyed. They will not even be given the opportunity you were given. Sitsumi and the Three will waste but little time on them!"

"What," said Jeter calmly, "is Sitsumi's hurry? Why is he scared?"

"Scared?" Naka seemed on the point of hitting Jeter for the blasphemy. "Scared? He fears nothing. We'll down your friends long before their motors—"

Sitsumi suddenly turned and looked at Naka. The look in Sitsumi's eyes was murderous. Naka went dead white.

"I think your master believes you talk too much, Naka," said Jeter, but Jeter's eyes were gleaming, too.

As soon as Sitsumi had turned back to his station Jeter's lips began to move.

"See?" he said. "It isn't their machine guns these people fear. It isn't their bombs—it's their motors! I wonder why. . . ."

BY now the six planes were flying abreast, in battle formation, almost above the space ship, at perhaps a thousand feet greater elevation. A strange humming sound was traveling through the space ship. The whole inner globe was vibrating, shaking—and vibration was a menace to glass or crystal!

"We've got the answer!" said Jeter. "The outer rind, while capable of being softened—in sections at least, with safety—for special

reasons, such as happened when we were 'swallowed,' can be hardened to the point of disruption. It can be shattered, Tema, by vibration! That's why the space ship keeps far above the roar of cities! The humming of countless automobile engines might shatter the rind! God, I hope this is the answer!"

In his mind's eye Eyer could picture it—the outer rind "freezing" solid, and cracking with the thunderous report of snapping ice on a forest lake. No wonder Sitsumi and the Three must destroy the six planes.

"Now!" yelled Sitsumi. "Shift position! The space ship will be hurled directly at the formation of planes! Wang Li, to the beam controls!"

Wang Li sprang to the table, pressed a button. The humming sound in the space ship grew to mighty proportions. The trembling increased.

Jeter and Eyer kept their eyes glued to the six planes above. Without tilting their noses the six planes seemed to plunge straight down toward the surface of the space ship. Thus the two knew that the space ship was in motion—itself being bodily hurled, as its only present weapon of offense, against the earthling attackers.

A split second—

One of the planes struck the surface solidly and crashed. Instantly its wheels and its motor were caught in the outer rind.

The other five ships scattered wildly, escaping the collision by some sixth sense, or through pure chance.

"Poor devil!" said Jeter. "But his buddies can see his plane and know that it marks the spot where they could conveniently drop their bombs."

Eyer was on the point of nodding when Sitsumi shouted.

"Quickly, Wang Li! Spin the outer shell before the enemy uses the wrecked plane as an aiming point!"

A WHIRRING sound. The plane whirled around as though it were twirled on the end of a string. To the five other pilots it must have seemed that the plane had struck some invisible obstruction, been smashed, and now was whirling away to destruction after a strange, incomprehensible hesitation in the heart of the stratosphere.

"Quickly, you fool!" shouted Sitsumi at Wang Li. "You're napping! You should have got all those planes! And you should have spun the outer globe instantly, before the remaining enemy had a chance to find out our location."

"I can move away a half mile," suggested Wang Li.

"We've got to silence those motors, fool!" yelled Sitsumi. "You know very well that we can't run. Charge them again, and take care this time that you crash into the middle of their formation."

"They're scattered over too great an area. I should wait for them to reform."

"Fool! Fool! Don't you think I know the weakness in my own invention? The proper vibration will destroy us! If the rind is softened we become visible. We dare not wait for them to reform! Attack each plane separately if necessary, and at top speed!"

Jeter began to speak rapidly out of the corner of his mouth. Even Naka's attention was fastened on the five planes and Wang Li's efforts to destroy them.

"Gag Naka!" said Jeter. "The keys! In some way we've got to get to our plane. It's barely possible. If we can start the motor. . . . Hurry! Now, while the whole outfit is watching our friends out there!"

Eyer rose and reached for Naka with his right hand.

He dared not miss his lunge. He did not. His huge hand fastened in the throat of their keeper. Nobody —neither Sitsumi nor the Three— turned as Naka gasped and struggled. Eyer pulled the man back over the table and, his neck thus within reach of both hands, snapped it as he would have broken the neck of a chicken.

Jeter was already searching the body for the keys. He found them.

Their leg irons were just falling free when Sitsumi turned. Eyer was feeling for the automatics in Naka's belt.

"We won't need them!" yelled Jeter. "There isn't time. Let's go!"

Jeter was away at top speed, almost pulling Eyer off his feet because their hands were still fastened together with the handcuffs.

They were outside on the floor level.

And through many doors denizens of the lower control room, hurried out by the commands of Sitsumi, were racing to head them off. But nothing could stop them. One man got in their way and Eyer's right fist caved in his face with one deadly, devastating blow. They had now reached the stairs.

THE space ship was being hurled at the five remaining planes. Even as the two men reached the stairs and started up, another of the dauntless rescuers paid with his life for his courage. Several bombs exploded as his plane struck the space ship, but they caused no damage whatever. The hard outer rind seemed to be impervious to the explosions. Obviously no explosive could destroy the space ship.

"Quickly, Tema," said Jeter. "The rind can be shattered by vibration, and we've got to do it somehow."

"And after that?" panted Eyer.

"Our friends out there can then see the inner globe. They'll drop bombs. They'll smash in the globe and—"

"I know," said Eyer. "Its inhabitants, including us, will start off in all directions through the stratosphere, with great speed, and probably in many pieces."

Jeter laughed. Eyer laughed with him. They didn't fear death, for now they felt they were on the verge of destroying this monster of space.

Their pursuers were following them closely.

Jeter frantically tried to unfasten the handcuffs as they ran. He didn't manage it until the door was almost reached. He left one cuff dangling on his right wrist.

Then, they were through the door.

"Now, Tema," shouted Jeter, "if you believe in God—if you have faith—pray for strength to move this plane!"

"Where?"

"So that its wheels and nose go through this open door! Then it won't travel forward when we start the motor—and our pursuers won't be able to get through to stop us."

"You think of everything, don't you?" There was a grin on Eyer's face. But his eyes were stern. He wasn't belittling their deadly danger. And there was also a chance that Jeter's vibration idea was wrong.

"Those four planes," panted Jeter, as the two tried to get their plane in motion toward the door, "cause, from a distance, through thin air, a slight vibration, varying with their distance from the globe; our plane, motor racing and actually in contact with the globe, can set up a tremendous vibration by its great motor speed. If we can vibrate the globe up to its shattering point there's a chance!"

"We can't pull her, Lucian," said Eyer. "I'll do a Horatius at the door. You get in, start the motor, taxi her until the wheels go through. I'll keep the crowd back."

"Right!"

Jeter went through the doors into the plane. In a few seconds the propeller kicked over, hesitated, kicked again. Then the motor coughed, coughed again, and broke into a steady roaring.

CHAPTER XII

High Chaos

THE plane moved forward. Its tail swung around. Its wheels headed for the door. They dropped through, into the faces of the foremost pursuers, all of whom were thus effectually blocked off.

The plane was held as in a vise. The propeller vanished in a blur as Jeter let the motor out. It was humming an even, steady note. The doors came open again.

Jeter came out, his eyes glowing.

"We haven't the chance of the proverbial celluloid dog chasing the asbestos cat," he shouted to be heard above the roar of the motor. "But grab your high altitude suit, oxygen container, and parachute, and let's get as far away from this plane as we can. Who knows? When the end comes we may get a break, at that!"

They ran until the bulge of the inner globe all but hid the plane from them. They could see only the top wing. They did not go farther because they wished to make sure that the enemy did not dislodge the plane and nullify all their work.

"They won't be able to," said Jeter, "for that motor is pulling against the wheels and holding them so tight against the side of that door that a hundred men couldn't budge the plane. But we can't take chances."

Quickly the partners slipped into their suits, adjusted their oxygen tanks and parachutes. Then Jeter slipped back the elastic sleeve of his suit and motioned Eyer to do the same. The manacles were brought into view again. They looked at each other. Eyer grinned and held out his left hand. Jeter snapped the second cuff to Eyer's wrist.

The act was significant.

Whatever happened to them, would happen to both in equal measure. It was a gesture which needed no words. If they were slain when their friends—if their theory was correct—finally saw the space ship, they would die together. If by some miracle they were hurled into outer space and lived to use their parachutes—well, the discomfort was a small price to pay to stay together.

Now they devoted all their attention to their own situation. Four planes still spun warily above the space ship. Wang Li was patently trying with all his might to get all four of them before the Jeter-Eyer plane, by shattering the rind, disclosed the inner core to the bombs of the remaining planes.

"Lucian!" said the fingers of Eyer. "Can you tell whether anything is happening to the rind?"

Jeter hesitated for a long time. There was a distinct and almost nauseating vibration throughout all the space ship. And was there not something happening to the rind over a wide area, directly above the Jeter-Eyer plane?

They could fancy the snapping of ice on a forest lake in midwinter.

They couldn't hear, in their suits. They could only feel. But all at once the outer rind, above their plane, vanished. At the same instant the plane itself, propeller still spinning, rose swiftly up through the hole in the rind. The

air inside the globe was going out in a great rush.

The partners looked at each other. At that moment the four planes swooped over the space ship. . . .

JETER and Eyer knew that the inner globe had at last become visible, for from the bellies of the four planes dropped bomb after bomb. They fell into the great aperture. Jeter and Eyer flung themselves flat. But the bombs had worked sufficient havoc. They had removed all protection from the low-pressure stratosphere. The air inside the space ship went out with a rush. Jeter and Eyer, hearing nothing, though they knew that the explosions must have been cataclysmic, were picked up and whirled toward that opening, like chips spun toward the heart of a whirlpool.

But for their space suits they would have been destroyed in the outrush of air. Out of the inner globe came men that flew, sprawled out, somersaulting up and out of apertures made by the crashing bombs. Ludicrous they looked. Blood streamed from their mouths. Their faces were set in masks of agony. There were Sitsumi and, one after another, the Three.

Then, fastened together by the cuffs, the partners were being whirled over and over, out into space. Their last signals to each other had been:

"Even if you're already dead, pull the ripcord ring of your chute!"

Crushed, buffeted, they still retained consciousness. They sought through the spinning stratosphere for their rescuers. Thousands of feet below—or was it above?—they saw them. Yes, below, for they looked at the tops of the planes. Their upward flight had been dizzying. They waited until their upward flight ceased.

Then, as they started the long fall to Earth, they pulled their rings and waited for their chutes to flower above them.

Soon they were floating downward. Side by side they rode. Above them their parachutes were like two umbrellas, pressed almost too closely together.

They looked about them, seeking the space ship.

The devastation of its outer rind had been complete, for they now could see the inner globe, and it too was like—well, like merely part of an eggshell.

The doomed space ship—gyroscope still keeping the ray pointed Earthward—describing an erratic course, was shooting farther upward into the stratosphere, propelled by that ghastly ray which, now no longer controlled by Wang Li, drove the space ship madly through the outer cold.

Far below the partners many things were falling: broken furnishings of mad dreamers' stratosphere laboratories, parts of strange machines, whirling, somersaulting things that had once been men.

The partners looked at each other.

The same thought was in the mind of each, as the four remaining planes came in toward them to convoy them down—that when the lords of the stratosphere finally reached the far Earth, only God would know which was Sitsumi and who were the Three.

The End of Time

By Wallace West

"THERE is no doubt of it!" The little chemist pushed steel-bowed spectacles up on his high forehead and peered at his dinner guest with excited blue eyes. "Time will come to an end at six o'clock this morning."

Jack Baron, young radio engineer at the Rothafel Radio laboratories, and protégé of Dr. Manthis, his host, laughed heartily.

"What a yarn you spin, Doctor," he said. "Write it for the movies."

"But it's true," insisted the older man. "Something is paralyzing our time-sense. The final stroke will occur about daybreak."

By millions of millions the creatures of earth slow and drop when their time-sense is mysteriously paralyzed.

"Bosh! You mean the earth will stop rotating, the stars blink out?"

"Not at all. Such things have nothing to do with time. You may know your short waves, but your general education has been sadly neglected." The scientist picked up a weighty volume. "Maybe this will explain what I mean. It's from Immanuel Kant's 'Critique of Pure Reason.' Listen:

> "'Time is not something which subsists of itself, or which inheres in things as an objective determination, and therefore remains, when abstraction is made of the subjective conditions of the intuition of things. For in the former case it would be something real, yet without presenting to any power of perception any real object. In the latter case, as an order of determination inherent in things themselves, it could not be antecedent to things, as their condition, nor discerned or intuited by means of synthetical propositions *a priori*. But all this is quite possible when we regard time as merely the subjective condition under which all our intuitions take place.'

"There. Does that make it clear?"

"Clear as mud," grinned Baron. "Kant is too deep for me."

"I'll give you another proof," snapped Manthis. "Look at your watch."

The other drew out his timepiece. Slowly his face sobered.

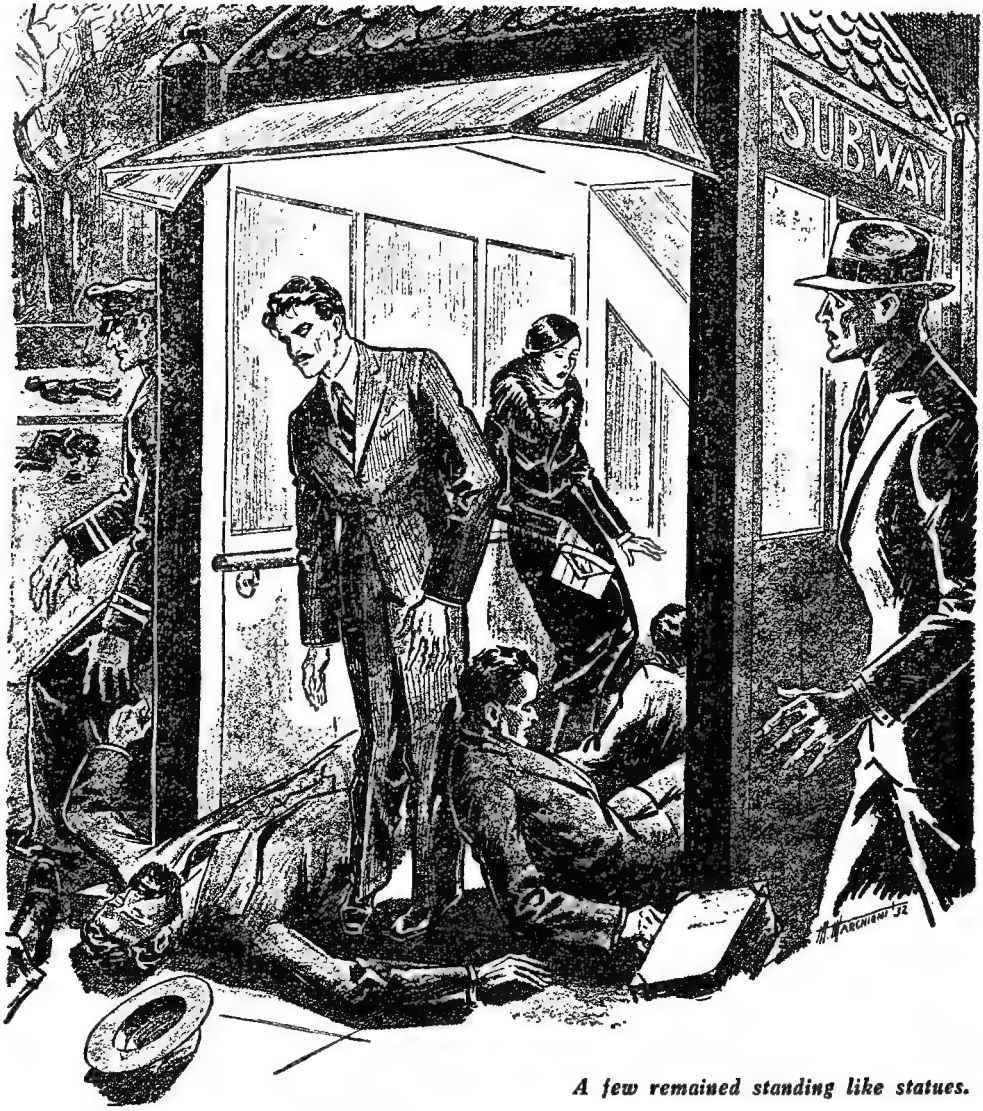
"Why, I can't see the second hand," he exclaimed. "It's just a blur!"

"Exactly! Now look at the minute hand. Can you see it move?"

"Yes, quite clearly."

"What time is it?"

"Half past one. Great Scott! So that's why you spun that yarn." Baron hoisted his six feet one out



A few remained standing like statues.

of the easy chair. "It's 'way past your bedtime. Didn't mean to keep you up." He stared again at his watch as if it had betrayed him. "It seems we just finished dinner. I must have dozed off. . . ."

"Nonsense," sniffed Manthis. "You arrived at eight o'clock—an hour late. You and I and my daughter had dinner. Then the two of us came in here. We smoked a cigarette or two. Now it's half-past one. Do you need more proof?"

"Your theory's all wet somewhere," the younger man protested with a shaky laugh. "If my watch isn't broken, time must be speeding up, not stopping."

"That comes from depending on your senses instead of your intelligence. Think a minute. If the watch seems running double speed that would indicate that your perception of its movements had slowed down fifty per cent."

Baron sank back into his chair, leaned forward and gripped his curly black hair with trembling

fingers. He felt dizzy and befuddled.

"June," called the doctor. Then to the agitated youth he added: "Watch my daughter when she comes in if you still think I'm crazy."

As he spoke the door flew open and a slim, golden-haired girl shot into the room like a motion picture character in one of those comedies which is run double speed. Jack's eyes could hardly follow her movements.

She came behind her father and threw one slim arm about his shoulders. She spoke, but her usually throaty voice was only a high-pitched squeak.

"Can't understand you, dear," interrupted her father. "Write it down."

"June is using a drug which I prepared to keep her time sense normal," Manthis explained as the girl's pen raced over a pad. "That's why she disappeared after dinner. I wanted you to get the full effect. Now read this."

"The deadline is approaching," the girl's message read. "You'd better take your injection now. It is 2:30 A. M."

"All right, prepare the hypodermics," directed the chemist. He had to repeat this in a falsetto voice before June understood. "Make one for Jack too."

June went out at express-train speed.

Baron glanced at his watch again. The minute hand was moving with the speed at which the second hand usually traveled. Three fifteen already!

When he looked up June was in the room again with two hypodermic needles. Quickly she removed her father's coat and made the injection.

"Let her fix you up too, boy, unless you want to become a graven image," commanded Manthis. His voice, which started at the ordinary pitch, went up like a siren at the end as the drug took effect. Dazedly Jack held out his arm.

THE sting of the needle was followed by a roaring in his ears like a hundred Niagaras. The room seemed to pitch and quiver. Staring down at the watch he still clutched, Jack saw the hands slow down and at last resume their accustomed pace. Gradually the unpleasant sensations died away.

"That was a close shave," commented the doctor, drawing a long breath. "I wouldn't have waited so long, except that I wanted to experience the sensation of coming back from the edge of the infinite. Not very nice! Like being pulled out of a whirlpool. It's 4:30 now. Took us an hour to return to normal, although it seemed only minutes. We have an hour and a half before the end. June, have you noticed anything unusual on the streets?"

"Yes," whispered his daughter, her usually piquant face pinched and white. "I've been watching from the balcony. It's dreadful. The people creep about like things in a nightmare."

Manthis tried to reassure her. On his face was a great sadness which was, however, overshadowed by a greater scientific curiosity.

"There's nothing we can do for them now," he said. "But we must learn all we can. Let's go down and watch the city die."

They descended in an automatic elevator and hurried through the hotel lobby. The lights of Fifth Avenue gleamed as brightly as ever. The streets near the lower end of Central Park still were crowded. But such crowds! They moved with infinite langour. Each step required many seconds.

Yet the people apparently did not know that anything unusual

was happening. Many perhaps were puzzled because their watches seemed to be misbehaving but this did not stop their conversation as they traveled home from theaters or night clubs. Two white-haired men passed by, engaged in a discussion of business affairs. Their voices were pitched so low that they were almost inaudible to the trio of watchers, while their gestures looked like the slow waving of the antennae of deep sea plants.

"MY God, man!" cried Baron, at last awakening from his horror-stricken silence. "Why didn't you warn the world? This is criminal. If what you say is true, all these people will become rooted in their tracks at six o'clock like—like characters from 'The Sleeping Beauty.'"

"I only discovered the danger a week ago while working out a chemical formula." Manthis' eyes showed the strain he was enduring. "It was a very delicate piece of work having to do with experiments I am making on chlorophyl—quick adjustments, you know. I'd done the thing before many times, but last week I couldn't mix the ingredients fast enough to get the necessary reaction. Puzzled, I made further experiments. The result was that I discovered my perception of time was slowing down. I tested June and found the same thing. There was but one conclusion."

"But the drug we are using. How did you hit on that?"

"I recalled that such drugs as hashish greatly speed up the time sense. An addict is able to review his entire past life or plan an elaborate crime between two heartbeats. So I collected a small supply of the stuff."

"But hashish in large doses is deadly, and I've heard that users of it sooner or later develop homicidal mania—run amuck as they say in India."

"True enough," admitted the chemist, "but Andrev, the Russian, you know, recently worked out a formula to neutralize the deadly effects of the drug but retain its time-expanding effect for medical purposes. I've added that to the pure drug. There isn't enough of it in New York to keep all these people normal for five minutes. Why should I have frightened the poor things?"

He relapsed into silence and the others found no heart to ask further questions as they watched the coming of the end of a world. The procession of passers-by had thinned somewhat by now. The street lights had grown dim. There was a look of increasing puzzlement on the faces of the people who remained. Something was wrong. They knew not what.

FLOATING along the sidewalk like a figure in a slow motion picture came a tiny tot of three. She was sobbing. Great tears formed with painful slowness and slid down her flushed cheeks.

"She's lost," exclaimed June. "Here, darling, I'll find your mama."

She picked up the child and looked up and down the street. The mother was not in sight. Automatically she turned to a policeman who stood nearby.

"Officer," she said quickly, "this girl is lost. Will you . . . ?"

She stiffened in dismay. The policeman was staring through her as if his eyes had not registered her approach. Slowly his gaze came into focus. A puzzled look came over his Irish face. He spoke. It was only a blurred rumble.

"What can I do for her, Father?" June cried, turning away from the officer in despair. "She's dying. See? Couldn't we give her some of the drug?"

"There's only enough for us," her father replied firmly.

"But she'll be quite dead in an hour!"

"I'm not so sure of that. Perhaps only in a state resembling catalepsy. We must wait. Jack, take her into the lobby. Put her on a sofa there."

Dawn was paling the blue-black sky as the radio engineer returned. The street lights fluttered fitfully and at last died. The streets had become deserted although groups still eddied slowly about the subway kiosks.

"Five forty-five," whispered Manthis. "The end should come any moment."

As he spoke a white-garbed street sweeper, who had been leaning on his broom at the curb ever since the onlookers had reached the sidewalk, decided to move on at last. With infinite slowness his foot came up. He poised, swung forward, then, the universal paralysis overcoming him, remained in a strangely ludicrous position for a moment before crashing downward on his face.

As far as they could see in the semidarkness, others were falling. A few, balanced with feet wide apart, remained standing like statues. Those who collapsed writhed slowly a time or two and were still.

After the thudding of the bodies had ended the silence became ghastly. Not an awakening bird twittered in the trees of Central Park. Not a sheep bleated in the inclosure. Except for their own breathing and the sighing of the wind, not a sound! Then a far-away clock boomed six notes. The noise made them start and turn pale faces toward each other.

"Come," said the doctor heavily. "It's all over. We might as well go up. We'll have to walk. All power will be off. Twenty stories!"

THE lobby of the Hotel Atchison, on the roof of which the penthouse apartment was located, was empty now except for a few clerks and bellboys. These sat with bowed heads before their grills or on their benches as if they had merely succumbed to the unpardonable sin of sleeping on duty. But they did not breathe.

June clung to her father's arm as they crossed noiselessly over the heavy carpet.

"The city will be a charnel house when these bodies start to decompose." Baron hesitated. "Shouldn't we get out of town while there is a chance?"

Manthis shook his head. "No. I'm convinced these people aren't dead. They're simply outside of time. Change cannot affect them. If I'm not mistaken they will remain just the same indefinitely."

"But there will be fires throughout the city."

"Not many. The electricity is off. The day is warm so no furnaces are going. Not even a rat is left to nibble matches, for the animals must be affected in the same way that humans are. The world is asleep."

AFTER mounting interminable stairs they regained the apartment and went out on the balcony. It was full daylight now but not a smoke-plume trailed from tall chimneys. Not a bird was on the wing. Elevated trains stood on their tracks, passengers and guards asleep inside.

"I still don't understand," muttered Baron. "The sun comes up. The wind blows. How can that be if there is no time? Might this not be some plague?"

"In a way you are right, boy. It is a plague which has paralyzed man's sense of time. You have become involved by not remembering Kant's axiom that time is purely

subjective. It exists in the mind only. It and space are the only ideas inherently in our brains. They allow us to conduct ourselves among a vast collection of things-in-themselves which time does not affect."

"But—"

"Wait a moment. Granting that time is in the mind rather than in the outside world, what will happen if the time-sense is paralyzed? Won't the effect be similar to hypnosis whereby a man is reduced to a cataleptic state? The thought chain which usually passes ceaselessly through the brain is halted."

Seeing that the engineer still looked puzzled, June interposed:

"It's something like enchantment," she explained. "The old legends are full of it—the Sleeping Beauty, Brunhilde, Rip Van Winkle. I am convinced that in ancient times a few persons knew how to draw a fairy ring about those they wished to injure or protect, placing them thus outside the reach of time and change. This has now happened the world over, perhaps through some drift in the ether or germ in the brain. That is what we must find out so we can solve the mystery and take steps to reawaken the world—"

"Perhaps this will help," interrupted Manthis in his turn. "As you know, all the great scientists —Einstein, Jeans, Pavlov—are convinced that everything in the universe is a form of vibration. Even thought, they believe, operates somewhat like a very short radio wave. What if some agency, either inside or outside the universe, began interfering on the thought-wave channel?"

"Granting your supposition," —Jack was on his own ground now —"transmission would be impossible on that channel."

"Exactly! Well, that's what I am convinced is taking place. I'm a chemist, not an engineer. I've given you the lead. You'll have to do the rest. Do you think you might locate such interference?"

"Possibly. I'll do my best."

"Fine! Of course, if it is coming from outside the stratosphere as the cosmic rays do, there is no hope. But if someone is broadcasting such a devilish wave from an earthly station we may have a chance to stop it.

"Now, Baron, my boy," he continued, dropping into a more jovial tone and leading his friend into the laboratory, "you'll have to get busy if you intend to keep us ticking. This equipment is at your disposal." He waved toward a newly installed short wave radio transmitter. "Here are storage batteries, all charged." He opened another door. "I have a five kilowatt generator installed here. It is operated by a gasoline engine. If you need other equipment you can raid the Rothafel plant."

RETURNING to the main laboratory he indicated the work table set close to a great double window overlooking Central Park.

"Couldn't ask for anything better, could you?" he smiled. "Plenty of light and air and a view of the city. Look, you can even see those poor devils lying around the subway kiosk." His face became bleak. Then he shrugged and tried to throw off his depression. "June and I will help you as much as we can. We can raid stores for provisions and hashish. Now let's have breakfast."

The next few days were filled with unending labor for the temporal castaways. From daybreak until far into the night, with radio receivers clamped over their ears, the three twisted dials, adjusted rheostats and listened in on long and short wave bands. But the ether, which once had pulsated with

music and friendly voices, now was silent, except for static.

"Makes me think of Sunday mornings when I was a boy," Manthis once commented. "Only this is more quiet. It gives me the jitters." There was a note of hysteria in his voice.

When the doctor's nerves began to quiver in that manner, Baron always insisted that they all rest. During such recesses they ate, played cards and helped June with the housework. The younger man was continually amazed by the calmness with which the girl faced their desperate situation. Clad in a blue smock which brought out the color of her eyes, she flitted about the apartment, manufacturing delicious meals out of canned goods and always having a cheery word when the others became discouraged. Yet she never would look out the window.

"I can't bear to see those poor souls lying about like rag dolls," she explained. "The only thing that keeps me sane is the hope that we may reawaken them."

IT was on the evening of the third day that Baron lifted the headset from his burning ears and admitted failure.

"We've explored everything but the super-short waves," he sighed. "I'll have to get equipment from the laboratories before we start on those."

June nodded from where she perched on a high stool across the table. But Manthis did not hear. He was making delicate adjustments on his receiving set and listening with rapt attention.

"I've got something," he cried. "Jack. June. Plug in on my panel. Someone is talking. It's very loud. Must be close."

Instantly the others did as he ordered, but were able to catch only the last inflections of a ringing voice. Then silence settled once more.

"What did he say," the youngsters cried in one breath.

"Couldn't understand. Some foreign language." The chemist was furious with disappointment. "But I'd recognize that voice among a thousand. We must get in touch with him. Perhaps he can help us. God knows we need assistance. Quick, Jack. You're an expert. See if you can pick up a reply."

Baron leaned over his instruments, heart thumping. The dreadful loneliness against which he had been fighting was broken. Others were alive!

Minutes passed and the evening light died away. They were too excited to strike a light. Shadows crept out of the corners and surrounded them. At last a faint voice grew in their ears. But again the words were unintelligible.

"Sounds a little like Greek," puzzled the girl, "but it isn't."

Baron adjusted the direction finder and made scribbled calculations.

"Coming from the southeast and far away," he breathed.

"I caught a word then," gasped the doctor. "'Ganja,' it was."

"What does that tell us?" snapped Jack, his nerves jumping.

"Ganja is the Hindu word for hashish, that's all. My Lord, man, don't you understand? The station is in India. Those who operate it are using Andrev's solution as we are. I—"

"Listen!" shouted Jack.

THERE was a grinding and clashing in the receivers. Then a new voice, harsh and strained with excitement, almost burst their eardrums.

"Beware! Beware!" it screamed. "Do not trust him. He is a devil and has put the world asleep. His mind is rotten with hashish. He is

a demon from—" Then came a dull, crunching sound. The voice screamed and died away.

In the darkened laboratory the faces of the three listeners stood out like ovals of white cardboard.

"What do you make of that?" stammered Baron at last.

"It looks as if the only persons alive, in New York at least, are hashish addicts—the most debased and murderous of drug fiends." The doctor stopped, his eyes dilating with horror. June crept close to him and threw an arm around his shaking shoulders. "Can't you see? Their time-sense expanded too. Like us they were unaffected. But unlike us they use the pure drug. Hashish smokers are without exception homicidal maniacs, vicious criminals. God!"

"Are they responsible for the end of time?" queried Jack.

"I don't know. Perhaps some master mind among them is back of it—some engineering wizard who has succumbed to the drug so recently, or who has such a strong constitution that his intelligence has not been destroyed."

The little doctor dragged off his headset, disarranging his sparse gray hair. His face was tired and worn but his jaw thrust forward pugnaciously.

"We're making headway," he cried. "We know the probable author of the catastrophe is a drug addict and that he is located nearby. We know he has no scruples, for the man who warned us undoubtedly was killed. And I'm convinced those extremely short wave bands hold the secret. Let's knock off for the day. We look like ghosts. To-morrow morning you and June get what equipment you need from across the river. I'll stay here on guard. You'd better raid a drug-store and get some more of our life-saver, too. It's listed under Cannibis Indica."

THE next morning dawned clear and cold. It was early October and there was a chill in the apartment. Baron swung his legs over the edge of the davenport in the living room and stared out at the frost-covered trees of Central Park. The leaves were falling before the brisk wind and forming little eddying mounds over the forms of those lying about the streets. Jack shivered at the thought of the millions and millions of victims of the disaster who littered the Earth. They seemed to accuse him of still being alive. Well, if Manthis was right, perhaps all could be revived before winter set in.

June was singing as he and the doctor came to breakfast. Apparently she wished to forget the events of the previous night, so they laughed and joked as though they intended to go on a picnic rather than across a dead city.

The hotel lobby was as they last had seen it when they descended. The bellboys still nodded on their benches. A traveling salesman was bunched over a week-old *Times* as if he would awake in a few minutes, glance about guiltily and resume his reading. The child they had rescued still lay on the divan. Her golden hair framed her cheeks like a halo. One arm was thrown above her head. She seemed ready to awake, though she had not breathed for days.

"It all makes me feel so lonely," whispered June, clinging to the engineer's arm. "I want to cry—or whistle to keep up my courage."

"Don't worry," Jack replied softly, patting her hand and speaking with more assurance than he felt. "We'll find a way out."

She squeezed his arm and smiled at him with new courage. For months, in fact ever since his first visit to the Manthis apartment, Baron had admired the doctor's

charming daughter. Although nothing had been said of love between them they often had gone to a dance or the theater together, while a firm friendship had been cemented. Now their closer association and the unflinching bravery which she showed was ripening this into a stronger bond.

THEY went out into the crisp morning, stepped across the body of a street sweeper who lay in the gutter, and entered the doctor's automobile. Through the silent city they drove, Baron watching carefully to avoid striking stalled cars or grotesquely sprawling bodies.

There was a tangle of wrecked automobiles in the center of the Queensboro Bridge and they were forced to push them apart to get through. While they were engaged in this arduous work, a drifting ferry bumped into a pier, shaking the dreaming captain into a semblance of life at the wheel.

"I used to like fairy tales," moaned June. "They're dreadful, really."

She clung to him like a frightened child. He drew her close and kissed her.

"I love you, June," he whispered, as though fearful that the sleeping drivers of the tangled cars might overhear. "Don't be afraid."

"I'm not—now," she smiled through eyes filled with tears. "I've loved you for months, Jack. Whatever happens, we have each other."

He helped her back into the car and drove on in silence. At last the Rothafel plant gloomed before them, forbidding as an Egyptian tomb. With a feeling that he was entering some forbidden precinct, Jack led the way to his office. Somehow, without its usual bustle and bright lights, it seemed alien.

Once inside he forgot his hesitation and set about collecting equipment—queerly shaped neon tubes, reflectors, coils, electrodes. Soon there was a pile of material glinting on top of his desk.

They were exploring a deep cabinet with the aid of a flashlight when a strange clicking sound made them whirl simultaneously. In a corner of the room a deeper blot of shadow caught their eyes. Jack snapped on the flash. In the small circle of light a long, cadaverous face appeared. Thin lips were drawn back over wide-spaced yellow teeth. Black eyes stared unwinkingly into the light. The flash wavered as the engineer tried to get his nerves under control.

"It's nothing," he assured the trembling girl. "A night watchman caught as he was making his rounds, probably. Don't get excited." He wet his lips.

"He's alive!" screamed June. "The eyelids! They moved!"

"YES, I'm alive," boomed a hoarse voice. "I thought I was the only man God had spared. Pardon me for frightening you. I was so thunderstruck. . . ."

The stranger stepped forward. He was dressed in a long black topcoat, high collar and string tie. The clicking noise was explained when he rubbed his long white hands together, making the knuckles pop like tiny firecrackers.

"Ivan Solinski, at your service." He smiled with what evidently was intended to be warmth, again showing those rows of teeth like picket fences. "I suppose we're all here on the same mission: to find a solution for the mystery of the world's paralysis." The apparition lit a long and bloated cigarette and through the acrid smoke surveyed them quizzically.

"I'm Jack Baron, formerly on the staff here, and this is June Manthis, daughter of Dr. Frank Man-

this, head of the chemical research department." The engineer winced as Solinski enfolded his hand in a clammy grip.

"Ah yes, I know the doctor by hearsay. A great scientist. He has a lovely daughter"—bowing deeply to June as he let his beady eyes wander over her face and figure. "Perhaps we can join forces, although I must admit I have abandoned hope. It is God's will." He rolled his eyes toward heaven, then riveted them once more upon June.

"Why, certainly." Jack was striving to overcome his growing dislike. "We'll be driving back in a few minutes. Would you care to come with us?"

"No." The pupilless eyes skittered toward Baron for a moment. "I know the doctor's address. I will come to visit you soon. Now I must be going." Solinski turned as if to depart, then strode to the desk and looked down at the mass of equipment. "Ah, super-short wave tubes, I see. Very clever." His dexterous fingers lingered over them a moment. Then he bowed and was gone.

THE two remained staring at the empty doorway.

"I—I wish he'd been dead—sleeping," whispered June at last, twisting her handkerchief with trembling fingers. "He—I didn't like the way he kept looking at me."

"He seemed all right to me." Jack tried to forget his own prejudice. "He's willing to help us."

"Might he not be one of the hashish addicts? Those eyes—the pupils were mere pinpoints—and those evil-smelling cigarettes."

"Then why should he have offered to help?" puzzled Jack. "He could have killed us."

"Nevertheless I hope we've seen the last of him. Are you about through? Let's get out of this awful place. He looked like a mummy!"

They drove back to the apartment so completely preoccupied that both forgot to obtain the drug which the doctor had requested.

"Yes, I've heard of him," Manthis said after he had been informed of the encounter. "A naturalized Russian. Used to do quite a bit of valuable work in various fields of physics. But he was some sort of radical—seems to me an old-fashioned anarchist—and not popular. He dropped out of sight several years ago. I presumed he was dead."

They soon had the new equipment installed and again began exploring the wave bands, beginning with the comparatively lengthy ones and working down into those only slightly longer than light. It was tedious work, but all were by now as adept as Jack in combing the ether and their task progressed rapidly. Despite the labor, however, nothing could be heard. There was only the universal, breathless silence. At times they moved to the commercial bands and tried to pick up the stations they had heard on the previous day, but even there they met with failure.

BY the evening of the third day they had left the wave bands which could be measured in meters and were exploring those strange and almost wholly uncharted depths of the ether which must be calculated in centimeters. There at last luck favored them. It was Jack who caught a strange pulsating tone on the three-centimeter band. It rose and fell, rose and fell, then died away like the keening of a lost soul.

"Listen," he whispered. "Plug in here. I've found something."

June and the doctor followed his instructions. Delicately fingering the coils, Baron picked up the sound again, only to lose it. Then it came once more. This time he

followed it as it changed to the five centimeter band. Back and forth it went as though weaving an intricate and devilish web.

"What do you make of it?" queried the doctor at last.

"Don't know." Jack bit his lips. "It's no natural phenomenon, I'll swear. Somebody is manipulating a broadcasting station of terrific power not far from here and playing with that wave as a helmsman brings a sailing ship into the wind and lets her pay off again."

"What do we do now?" The little chemist, finding his theory apparently confirmed, was at a loss. "Could we wreck that station?"

"Fat chance!" The engineer laughed bitterly as he reached for a cigarette. "Whoever has conceived that bit of hellishness is well guarded. The three of us wouldn't have a ghost of a show. What I can't understand is—"

"No use talking about theories now." Manthis sat down, crushed. Dropping his head in his hands, he pulled his few hairs as though that might drag out an idea. "What's to be done? Do you realize that we hold more responsibility than ever man has held before? Caesar! Napoleon! They were pikers. We have to save a world."

SILENCE greeted his outburst. The scratching of a match as June lit a cigarette sounded like an explosion. Then the smoke eddied undisturbed while the three stared vacantly into space, trying to think.

"Couldn't we"—the girl swallowed hesitantly as she realized her ignorance of radio engineering—"couldn't we interfere with that wave? Interfere with the wave which already is breaking up the thought waves. Cancel its power. Oh, Jack, you must know what I mean."

"With this dinky five-kilowatt station? We couldn't reach Yonkers against the power they've got. By Jove!" He leaped to his feet as a new thought struck him. "Maybe we could just wake up New York. Get help from the police then! Smash that other station afterwards!"

"But we don't know whether interference would break the spell," interposed the practical doctor. "And it will take a lot of practise to follow that wave. It jumps back and forth like a grasshopper."

"And if we don't do it right the first time, whoever is operating that station will be down on us like a ton of brick," admitted Jack.

"Let's get the child we saved," suggested June. "We can bring her up here. Then we'll need only a little power, just enough to be effective in this room, to bring her to life if we can. They wouldn't hear our wave."

"Great!" Jack bent over and kissed her. "You're a real help. I'll be back in a minute." He dashed out. Soon they heard his step on the stairs and he reappeared, tenderly bearing his golden-haired burden.

"Now, June," he commanded briskly, "place her in a comfortable position on the work table while I get ready." He began arranging equipment and connecting it with the bank of storage batteries.

"Shall I adjust a headset for her?" asked the impatient doctor.

"Be yourself!" Jack placed a crooked vacuum tube near the child's head and clamped two flat electrodes on her temples. "This wave must act directly on the brain. The sense of hearing has nothing to do with it.

"All right, Sleeping Beauty." He stretched the kinks out of his aching back. "Let's see what we can do for you. Pardon me, Doctor, if I seemed rude. This is ticklish work. Pick up the outside wave for

me. Thanks. Now I've got our dinky sending station set on the same wave length at a different frequency. It's adjusted so that as I keep in touch through this tuning coil, our wave will fluctuate over the same path as the other. It should take six or eight hours to overcome the effect on her, I judge. Here we go. June, you'd better get yourself and your dad some food. Doctor, you examine the kid from time to time. In an hour or so June can relieve me."

He pressed a switch. The tubes filled with a green glow.

TWO hours passed, and the sun was sinking behind the trees of the park in a bloody haze when Jack at last signaled for June to handle the dials. For a time he guided her slim fingers. Then, as she caught the trick, he rose and stretched his cramped muscles.

"Don't lose the wave for a moment or we'll have to start all over again," he warned. "Now for dinner!"

She nodded and, frowning slightly, bent over the dials.

At that moment there came a heavy knock on the apartment door.

"Who's that?" gasped Manthis, his face turning grey.

"Probably Solinski," replied Jack, feeling his spine crawl as he remembered the moldy Russian. "Fine time he chose for a visit."

"Shall I let him in?"

"Don't see what else there is to do."

"Good evening," cried their guest as Manthis opened the door. "Ah, Dr. Manthis, I believe. I have heard so much about your work." His hoarse yet ringing voice made the little man start violently and caused June to shake her head in annoyance as the sound interfered with the humming of the vagrant wave. "Sorry I could not come earlier." Solinski advanced into the laboratory, giving the effect of driving the chemist before him. "Trying to revive one of the sufferers, I see. May God aid you in this noble work."

HE spread the tails of his long coat and sat down. As he talked his eyes flashed about the room, taking in every detail and at last fastening on June's fresh beauty like those of a vampire. "Not," he boomed as he lighted a cigarette, "not that I believe it possible—"

Catching an agonized glance from June, Jack interrupted:

"You'll have to speak softly, sir. This is ticklish work."

"I beg your pardon." The Russian lowered his voice so that it squeaked piercingly like a rusty hinge. He wrung his hands audibly.

"Perhaps we'd better move into the living room," suggested the doctor, hovering in the background. "There we can talk without interrupting."

Their guest unfolded joint by joint like a collapsible rule.

"Of course, if you think I'm spying," he grated.

"Not at all," protested Jack, although he longed to strike the brute across the face. "It's just that voices of certain pitches interfere. Surely you have seen radio operators go all to pieces when spoken to."

Ungraciously Solinski allowed himself to be ushered into the outer room. Once there he disposed his lean form on another chair, unctuously refused a highball, and, forgetting his momentary anger, soon was deep in a scientific discussion of the problems involved in revivifying the world.

He mentioned the nearby radio station but declared that he had been unable to locate it despite a careful search. Dismissing this he

turned to other topics, displaying a vast knowledge of all departments of scientific achievement and, despite his depressing personality, holding his hearer's attention so closely they forgot the passage of time until the clock struck ten.

"Time for daily injection," said the doctor. "Do you use Andrev's solution too, sir?"

"Naturally," replied the other, lighting one cigarette from the butt of another.

Manthis hurried into the laboratory. A few moments later he reappeared in the doorway and called to Jack in an agitated voice. As the younger man joined him he closed the door and turned a white face to him.

"The drug is almost gone." Manthis said. "Didn't you obtain a new supply?"

"WE—I forgot it," admitted Jack, feeling his own face grow pale. "The shock of running across Solinski at the laboratory upset me."

"Well, that's all right, then. It gave me a turn, but we have plenty of time." The doctor laughed shakily. "Run down to the nearest drug store. There should be a supply there. Better take a flashlight."

He pushed open the door, then shrank back. Leaning against the jamb was the Russian. His manner had changed subtly. His thin lips spread from ear to ear in a wolfish grin. His fingers clicked like castanets.

"Ah," he purred. "So you have used up the last of your solution?"

"What's that to you?" The doctor was gripped by cold unreasoning fear.

"Only that you will be unable to obtain more. Since my first meeting with your daughter I have had my men collect all the Cannibis Indica in the city."

"Your men!" Manthis was thunderstruck.

"Certainly, you old fool. Do you think I'm a bungling theorist like yourself? Who do you think is operating that short-wave station? I am. Who do you think put the world to sleep? I did. Who do you think will wake it? I will."

Solinski's figure appeared to expand. He took deep drafts from his cigarette. The smoke seemed to impell some terrific force into his gaunt frame.

"So it *was* your voice I heard!" cried Manthis bitterly. "And those awful tales about you were true. A hashish smoker! A person whose mind is rotting, in control of the world!" He seemed about to leap at the other, and his chubby figure, in that attitude, would have seemed ludicrous if it had not been tragic. "It shall not be!" he shouted.

"Now see here, Doctor"—Solinski assumed a friendly tone—"you're making a grave mistake. I have something to offer better than you ever dreamed of."

"What do you mean?"

"Just this. How would you like to be assistant to the King of the World?"

"CRAZY already," sneered the doctor, squinting up at his tormentor.

"Crazy or not, when the world awakes I will be its king."

"Why, damn you, I thought you were an anarchist and wanted to do away with kings and governments," sputtered the little man.

Solinski burst into a gale of fiendish laughter.

"An anarchist is merely a capitalist without money or power," he quoted.

"What do you want of us?" demanded Manthis, playing for time.

"Very simple. This: I intend soon to begin awakening those who will serve me, first in New York and

then throughout the world. When I have a skeleton government built up, I will withdraw the wave and allow the people to revive. Clever, isn't it? Especially for such a madman as you think me." He snapped his fingers and leered cunningly at them.

The doctor choked but Jack's hand on his arm steadied him.

"You have a very beautiful daughter," resumed their diabolical visitant.

"Leave my daughter's name out of this," cried Manthis, recoiling.

"Not at all. Her charm and ability have greatly impressed me—so impressed me that I have decided to make her my queen."

"You scum of the gutter. You filthy beast. I'd die before I'd be a party to such a thing!" The doctor was beside himself.

"I consider myself justified," replied the other, taking great delight in baiting his foe. "The world was never able to govern itself. We anarchists have bided our time, although overshadowed by communists, Fascists and such ridiculous experimenters. Now comes our turn. I shall be the viceroy of God. Under my rule and that of Queen June the world shall become a second heaven."

He rolled his eyes upward at those words. As he did so, Jack, who had been awaiting just such an opportunity, struck him on the jaw.

THE blow would have felled an ox but Solinski merely staggered back a step and snarled. Before Baron could renew the attack he jerked an automatic from beneath his coat and leaped to the hall door.

"You I shall kill," he grinned evilly. "But not now. First you must taste the horror of sinking into the long sleep. You have no more drug, nor can you obtain any. Those pitiful storage batteries will be exhausted by the time you have aroused the child. So you must sleep unless you have the courage to kill yourself. Doctor, I deeply regret that this has occurred, but you see that I must let you and June sleep too. When I have need of you I will recall you. That is all. Farewell. May God pity you, Baron. I will not."

He sprang through the door and, the tails of his black coat flapping like the wings of a gigantic bat, vanished down the stairs.

Manthis slammed the door and locked it, then leaned weakly against the panels and wiped his round face. His hands shook pitifully.

"This then is the end," he whispered hoarsely.

"Is there none of the drug left?" Jack shook him out of his lethargy.

"Enough for a half portion for all of us," sighed the doctor. "But what use of that? Better we poisoned ourselves now and escaped that demon."

"Nonsense. A half portion means twelve hours of life. In that time I can rig up the big transmitter. Perhaps there is still time to revive New York. Solinski won't know we have a generator until we turn on the power. Quick. Poor June must be nearly frightened to death at our shouting."

BUT they found the girl sitting tense and jubilant at the controls.

"Father! Jack!" she cried as the door opened. "It's working. I saw her move. That means we may be able to revive the world!" Her face was streaked with tears.

"Her heart's beating," whispered the doctor, feeling the child's pulse. "Slow but steady. She'll regain consciousness any moment now."

"No time to wait." Disregarding

June's cry of protest Jack stripped off the electrodes. "We must get the big machine working."

"But the little thing will die again," cried June, throwing herself on her knees beside the tot. "I didn't think you could be so cruel."

"Solinski has cut off our drug supply," explained Manthis gently. "He's operating the other station. Don't blame Jack. We must work fast."

"You mean that Russian is responsible for all this?"

"Yes, child. But maybe we can defeat him yet. Don't lose courage. Now I must go and prepare what's left of the drug. We're overdue for it now."

Meanwhile Jack was busy running leads from the generator room, connecting banks of tubes, stringing an aerial on the terrace.

"Twelve hours! Twelve hours!" he muttered. "Just time to make it if the doctor's calculations are correct. June, hand me those pliers, but be careful of the wires. I haven't time to insulate them. When we start the dynamo they'll be carrying twelve thousand volts."

"But won't Solinski and his men come back and kill us?" For the first time the full weight of despair descended upon her brave spirit.

"Probably. Does your father have a revolver?"

"I—I think so."

"Find out." Jack connected a loading coil with deft fingers. "Then go down to a sporting goods store and get some ammunition. If there are any shotguns in the place bring two back with plenty of buckshot shells. I don't think we're being watched yet, but if you're attacked, run for it."

Noting she looked hurt at his abruptness, he kissed her quickly.

"Sorry, darling. Every second counts. Run along, like a good girl."

She smiled for the first time in a long while and patted his hand.

WHEN she returned, two shotguns and several boxes of shells held like wood in her bent arms, the generator was sparkling merrily. The gasoline engine barked steadily and the vacuum tubes glowed green.

Manthis came in at that moment and injected all the remaining drug as Jack gave crisp orders. Automatically the engineer had taken command.

"I'll get things going and handle the dials until Solinski sends his rats down on us. June, you watch the street door. Run up at the first sign of an attack. After that you'll take my place and hold it, no matter what happens, until we succeed or are killed. The doctor and I will go downstairs when you come up, and hold them off or retreat slowly. Thank heaven we can command both the front and rear stairways from the halls. Now doctor, watch the circuit breaker. I'm going to throw on full power."

As he advanced the rheostat the tubes glowed brighter, bathing the room in unearthly light. Jack adjusted his headset and smiled up at June. She kissed him bravely before hurrying to her dangerous post.

Once more he sat listening to that whining, fluctuating wave. The engineer's thoughts wavered between speculations on the future, fond memories of June and impatience with the dragging hours. Would nothing ever happen? Through the earphones now came a jangling, agonized whine, as if the two antagonistic waves were endowed with life and actually struggling in the ether.

From time to time his glance wandered to the child, who, having obtained a head start through her preliminary treatment, now was stirring fretfully.

Slowly the time plodded by. Jack smoked cigarette after cigarette in

an effort to fight off the drowsiness which loaded his eyelids with lead.

It must have been three o'clock when a whimper from the divan apprised them that the child at last had awakened.

"Where's mama?" She blinked into the glare. "I've lost my mama."

"There, there, honey," soothed the doctor, stopping his pacing up and down the room and picking her up. "Your mama had to go away for awhile. She'll be back any minute. Let's go find a drink of water. And I've something for you to play with too." Gently he carried her into June's bedroom.

Soon he reappeared and patted Jack on the shoulder.

"Our first victory," he said in a broken voice." She's in perfect condition and sleeping naturally now. I gave her one of June's old dolls to play with." He sighed and collapsed into the nearest chair. "I'm almost dead with the strain of it. Do you think there's a chance?"

"Three more hours should turn the trick. I don't understand why Solinski—

The crash of a shotgun, coming faint but clear from the street below, brought him up short. The shot was answered by a volley of rifle fire.

JACK almost lost the wave in his excitement, but regained it with a desperate twist of the wrist. No time for nerves now. He must be calm!

"Go down and hold them until June can get back to relieve me," he ordered. "Hurry. They may rush her any moment."

The doctor seemed ten years younger as he thrust a revolver into his pocket, snatched a shotgun from behind the door and ran out.

The commotion had awakened the child, who started whimpering, adding further to Jack's distractions. Yet he managed, in spite of ghastly mental pictures of June being torn to pieces by her attackers, to keep his hands steady.

A few minutes later she slipped into the room and laid her cold cheek against his before taking her place at the instruments.

"It's all right," she added. "I don't think they'll attack in the dark. There are five of them. I'm sure I wounded or killed one. They weren't expecting a guard. I left the gun with father. He's behind the cashier's desk." Then, all her courage evaporating, she turned an appealing, little girl face toward her lover. "Don't let yourself be killed, Jack. I'd die too."

"June, you're wonderful," he whispered. "I didn't know there was a girl alive as brave as you. Good-by. No matter what happens, keep the wave in tune." He kissed her tenderly, trying not to think he had done so for the last time, and hurried out.

The stairs were black as the inside of a tomb. Once he stumbled over the body of a charwoman and came near falling headlong.

"Nothing's happened since that first volley," whispered Manthis when Jack slipped into the cage. "They're holding off for dawn. Look!" his voice wavered. "Was that a face at the window?" He fired wildly. Glass tinkled.

"Easy," warned Baron. "Don't waste ammunition. Besides, if you get this place full of smoke they'll jump us."

DAWN was painting the windows gray when the assault began. Their first warning came when a small object was tossed into the lobby. It exploded in a cloud of white vapor.

"Tear gas," yelled Jack. "Back to the stairs." They ran for cover, weeping and choking.

Then began a slow retreat up the

stairways, Jack guarding the front and Manthis the back passages. At first it was a simple matter for their enemies to toss tear bombs through the fire doors, then, protected by respirators, capture another floor. But as the light increased this became more and more hazardous. Twice a spray of buckshot laid a Solinski man low.

"He hasn't many men available," called Jack as the attack slackened. "But watch out. His time's about up. Hey, look at that woman!" A white-uniformed maid, whom he remembered having seen lying in the same spot every time he climbed the stairs, had stirred weakly, as though about to wake.

It was their glance at the sleeping form which undid them. When they looked up both fire doors were open and helmeted figures were emerging from them.

The shotguns roared. Two of their attackers collapsed, but the others came on. Before there was time for another shot they were at close quarters. Standing back to back, Manthis and Jack clubbed their guns and held their ground.

The fact that Solinski and his men wore respirators handicapped them immensely, so that the two defenders kept a cleared circle about them.

One of the attackers, more daring than the rest, leaped forward to engage the engineer. He collapsed with a crushed skull.

Then, when victory seemed in their grasp, luck turned. At Jack's next blow the stock of his weapon parted from the barrel, leaving him almost defenseless. At the same time Manthis slipped and collapsed from a knife thrust.

JACK was left alone to face three enemies and would have been killed within the minute had not Solinski, recalling the little time he had left to stop the interfering wave, deserted his comrades and sprinted for the laboratory.

The seeming defection of their chief threw the other two attackers into momentary confusion. Before they could recover, Jack knocked one out with the gun barrel, then made a flying tackle at the other.

But he had caught a tartar. His remaining enemy was a gigantic Negro. Recovering from his surprise the latter lifted high a glittering knife to finish his disarmed foe. Jack snatched at the uplifted arm—missed!

A revolver cracked. The hooded Negro staggered, then crashed forward.

"Remembered my pistol just in time," gasped the doctor from the floor. "Don't bother about me. I'm all right. Stop Solinski, for God's sake."

Although his lungs seemed bursting Baron turned and flew up the stairs. Being familiar with every turn, he gained on the Russian and caught sight of the dreadful black coat-tails as his enemy burst through to the twentieth floor. The locked door of the apartment baffled him only a moment. Stepping back, Solinski hurled his giant frame against the panels. They splintered and crashed inward. But the delay allowed Jack to catch up.

He leaped on the Russian's back. Locked together they reeled into the living room. For a fleeting moment Jack saw June sitting rigidly at the instruments. Her eyes were starting from their sockets but her hands were steady.

"I warned you to kill yourself," Solinski's voice rose in a screaming whisper through the respirator. "Now I will do it." Displaying the strength of madness he hurled Jack from him. Losing all control of his limbs, the younger man flew across the room and demolished the divan in his fall. But the thought of what

Solinski would do to June brought him back to the attack.

THE fury of their struggle wrecked the living room. Both bled from numerous wounds. One of the Russian's bleak eyes closed under a well-directed blow, but otherwise he seemed unaffected. Jack grappled again and realized his mistake as he was caught in a bone-cracking grip and forced into the laboratory.

Baron felt a rib snap. A sweat of agony broke out over his body. Holding his enemy helpless the invader worked his way toward the work table. They bumped against it, making the equipment totter perilously. Solinski released his grip, snatched a bottle of distilled water and swung.

Jack felt his head explode. The room went dark. But in his semi-consciousness he remembered he must not let the Russian reach that switch. As he slid slowly to the floor he grasped the other's legs.

The drug fiend tried to kick free, stumbled, struck the table with his hips. Throwing out his arms to regain his balance he plunged one hand among the naked cables which led from the generator to the transformers and tubes.

A blinding flash of light and the scream of a soul in torment followed. As a nauseating odor of burning flesh filled the room, the Russian was hurled backward like a rubber ball. He struck the window which overlooked the park, crashed through the large panel and fell!

June sat as though hypnotized, forcing herself to manipulate those dials.

Jack crawled to the window and watched the black body swoop downward like a wounded bird, the coat flapping like crippled wings. After what seemed an eon it struck the edge of the subway kiosk, bounced like a rag doll and sprawled across the pavement.

Still Jack did not move. Through a haze of his own blood he stared, the fate of his enemy forgotten. All about the kiosk bodies which had laid so still for the past week were moving. The little figures, not much larger than ants from that height, yawned, sat up and stretched as though it was the commonest thing in the world to take a nap in the midst of Fifth Avenue. It was as if the last swoop of that batlike figure had returned them to consciousness.

"The world is alive! The world is alive!" Baron croaked wildly as he felt his senses slipping from him. "We have won, June! We have won!"

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of Astounding Stories, published bi-monthly at New York, N. Y., for Oct. 1, 1932. State of New York, County of New York, ss. Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edwin F. Borden, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Astounding Stories and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit: 1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, W. M. Clayton, 155 E. 44th St., New York, N. Y.; Editor, Harry Bates, 155 E. 44th St., New York, N. Y.; Managing Editor, None; Business Manager, Edwin F. Borden, 155 E. 44th St., New York, N. Y. 2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) The Clayton Magazines, Inc., 155 E. 44th St., New York, N. Y., W. M. Clayton, 155 E. 44th St., New York, N. Y., Nathan Goldmann, 80 Lafayette St., New York, N. Y. 3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None. 4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. Edwin F. Borden, Business Manager. Sworn to and subscribed before me this 21st day of September, 1932. Eugene A. Boasi. (My commission expires March 30, 1933.)

The Death-Traps of FX-31

A Commander John Hanson Adventure

By Sewell Peaslee Wright

I DO not wish to appear prejudiced against scientists. I am not prejudiced, but I have observed the scientific mind in action, on a great many occasions, and I find it rather incomprehensible.

It is true that there are men with a scientific turn of mind who, at the same time, you can feel safe to stand with shoulder to shoulder, in an emergency. Young Hendricks, who was my junior officer on the *Ertak,* back in those early days of the Special Patrol Service, about which I have written so much, was one of these.

Nor, now that I come to think of the matter in the cool and impartial manner which is typical of me, was young Hendricks the only one. There was a chap—let's see, now. I remember his face very well; he was one of those dark, wiry, alert men, a native of Earth, and his name was—Inverness! Carlos Inverness. Old John Hanson's memory isn't quite as tricky as some of these smart young officers of the Service, so newly commissioned that the silver braid is not yet fitted to the curve of their sleeves, would lead one to believe.

I met Inverness in the ante-room of the Chief of Command. The Chief was tied up in one of the long-winded meetings which the Silver-sleeves devoted largely to the making of new rules and regulations for the confusion of both men and officers of the Service, but he came out long enough to give me the *Ertak's* orders in person.

"Glad to see you here at Base again, Commander," he said, in his crisp, business-like way. "Hear some good reports of your work; keep it up!"

"Thank you, sir," I said, wondering what was in the air. Any time the Chief was complimentary, it was well to look out for squalls—which is an old Earth term for unexpected trouble.

Commander John Hanson recalls his harrowing expedition among the giant spiders of FX-31.

"Not at all, Commander, not at all. And now, let me present Carlos Inverness, the scientist, of whom you have undoubtedly heard."

I bowed and said nothing, but we shook hands after the fashion of Earth, and Inverness smiled quite humanly.

"I imagine the good captain has been too busy to follow the activities of such as myself," he said, sensibly enough.

"A commander"—and I laid enough emphasis on the title to point out to him his error in terminology—"in the Special Patrol Service usually finds plenty to occupy his mind," I commented,

At the same instant two other trap-doors swung up.

wondering more than ever what was up.

"True," said the Chief brisky. "You'll pardon me if I'm exceedingly brief, Commander, but there's a sizeable group in there waiting my return.

"I have a special mission for you; a welcome relief from routine patrol. I believe you have made special requests, in the past, for assignments other than the routine work of the Service, Commander?"

He was boxing me up in a corner, and I knew it, but I couldn't deny what he said, so I admitted it as gracefully as I could.

"Very well," nodded the Chief, and it seemed to me his eyes twinkled for an instant. "Inverness, here, is head of a party of scientists bent upon a certain exploration. They have interested the Council in the work, and the Council has requested the cooperation of this Service."

He glanced at me to make sure I understood. I certainly did; when the Supreme Council *requested* something, that thing was done.

"Very well, sir," I said. "What are your orders?"

The Chief shrugged.

"Simply that you are to cooperate with Inverness and his party, assisting them in every possible way, including the use of your ship for transporting them and a reasonable amount of equipment, to the field of their activities. The command of the ship remains, of course, in you and your officers, but in every reasonable way the *Ertak* and her crew are to be at the disposal of Inverness and his group. Is that clear, Commander?"

"Perfectly, sir." Nothing could have been clearer. I was to run the ship, and Inverness and his crew were to run me. I could just imagine how Correy, my fighting first officer, would take this bit of news. The mental picture almost made me laugh, disgusted as I was.

"Written orders will, of course, be given you before departure. I believe that's all. Good luck, Commander!" The Chief offered his hand briefly, and then hurried back to the other room where the Silver-sleeves had gathered to make more rulings for the confusion of the Service.

"SINCE when," asked Correy bitterly, "are we running excursions for civilians? We'll be personally conducting elderly ladies next thing."

"Or put on Attached Police Service," growled Hendricks, referring to the poor devils who, in those days, policed the air-lanes of the populated worlds, cruising over the same pitiful routes day after day, never rising beyond the fringe of the stratosphere.

"Perhaps," suggested the level-headed Kincaide, "it isn't as bad as it sounds. Didn't you say, sir, that this Inverness was rather a decent sort of chap?"

I nodded.

"Very much so. You'd scarcely take him for a scientist."

"And our destination is—what?" asked Kincaide.

"That I don't know. Inverness is to give us that information when he arrives, which will be very shortly, if he is on time."

"Our destination," said Correy, "will probably be some little ball of mud with a tricky atmosphere or some freak vegetation they want to study. I'd rather—"

A sharp rap on the door of the navigating room, where we had gathered for an informal council of war, interrupted.

"Party of three civilians at the main exit port, Port Number One, sir," reported the sub-officer of the guard. "One sent his name: Carlos Inverness."

"Very good. Admit them at once, and recall the outer guards. We are leaving immediately."

As the guard saluted and hurried away, I nodded to Correy. "Have the operating room crew report for duty at once," I ordered, "and ask Sub-officer Scholey to superintend the sealing of the ports. Mr. Kincaide, will you take the first watch as navigating officer? Lift her easily until we determine our objective and can set a course; this is like shoving off with sealed orders."

"Worse," said Hendricks unhappily. "Sealed orders promise something interesting, and—"

"Carlos Inverness and party," announced the guard from the doorway.

Inverness nodded to me in friendly fashion and indicated his two companions.

"Commander Hanson," he said, "permit me to present Godar Tipene and Cleve Brady, who are my companions on this expedition." I bowed, and shook hands with Brady; Tipene was a Zenian, and hence did not offer me this greeting of Earth. Then, quickly, I com-

pleted the round of introductions, studying Inverness's companions with interest as I did so.

BRADY was short, and rather red-faced; a beefy, taciturn type, with a trap-like mouth and thoughtful, discerning eyes. He struck me as being one with whom most men would like to be friendly, but who would have exceedingly few friends.

The Zenian was a perfect foil for him. Tipene was exceedingly tall and slender, like all his race, and very dark. His eyes were almost womanly in their softness, and he had the nervous grace of a thoroughbred—which is an Earth animal of particularly high breeding, raised for show purposes. He had the happy faculty of speaking the language of Earth without a trace of Zenian or Universal accent; the Zenians are exceeded by none in linguistic ability, which was a real accomplishment before these decadent days when native languages are slipping so rapidly into obscurity.

"And now," said Inverness crisply, when the introductions were over, "I presume you'll wish to know something about our destination and the objects of this expedition, sir?"

"It would be helpful in charting our course," I admitted, smiling.

Inverness, with beautiful disregard for the necessities of space navigation, spread voluminous papers over the table whose surface was formed by the pair of three-dimensional charts which were the *Ertak's* eyes in outer space.

"Our destination," he said, "is a body designated on the charts as FX-31. You are familiar with it, Commander Hanson?"

"Hardly familiar," I admitted, smiling at Correy. "The universe is rather sizable, and even the named bodies are so numerous that one is able to be familiar with but an exceedingly small percentage. Its designation, of course, gives me certain information regarding its size, location and status, however."

"How much information, Commander?" asked Tipene nervously.

"Well, 'F' indicates that it is large; larger than Earth, for example. The numerals tells me where to locate it upon our space charts. And the 'X' would indicate that it is inhabited, but not by intelligent beings. Or that there is reasonable doubt as to the nature of those inhabiting it."

"A very good summary of the knowledge we have," nodded Inverness approvingly. "I can add but one bit of information which may or may not be accurate: that the sphere known as FX-31 is populated by a ruling class decidedly unusual in type, and possessed of a degree of intelligence which has made them virtual masters of the sphere."

"What are they like?" asked Correy. "Will they put up a fight? Are they dangerous?"

"OUR knowledge came from a luckless tramp liner which set down on FX-31 in search of water, their water-producing equipment having been damaged by carelessness. They found water, a great river of it, and sent a party of five men to determine its fitness for human consumption. They were snapped up before they had gone a hundred feet from the ship—and no more men were sent out. They hovered over the stream and drew up the water in containers devised for the purpose."

"Snapped up?" asked Correy impatiently. "By whom? Or what?"

"By spiders!" replied Inverness, his eyes shining with the fanatical gleam of a scientist who scents something strange. "Great spiders—perhaps not true spiders, but akin

to them, from the descriptions we have—of what is known on Earth as the trap-door variety, but possessed of a high degree of intelligence, the power of communication, and definitely organized."

"Organized," put in Tipene, "in the sense that they work together instead of individually; that there are those to command and those to obey."

"You say they are large," I commented. "How large?"

"Large enough," said Inverness grimly, "to enable one of them to instantly overpower a strong man."

I saw Correy glance forward, where our largest disintegrator-ray tubes were located, and his eyes lit up with the thought of battle.

"If there's anything I hate," he gritted, "it's a spider. The hairy, crawling beasts! I'll man one of the tubes myself, just for the fun of seeing them dissolve into nice brown dust, and—"

"I'm afraid not, Mr. Correy," said Inverness, shaking his head. "We're going to study them—not to exterminate them. Our object is to learn their history, their customs, their mode of communication, and their degree of intelligence—if possible."

"Yes," grunted Brady. "If possible."

KINCAIDE set the *Ertak* down on FX-31, close to the shore of a river, as gently as a feather settling to earth. Correy and I made our way to the exit port, where Inverness and his companions had gathered, with a considerable amount of scientific apparatus, and what seemed to be a boat, ingeniously taken down for shipment.

All three of the scientists were clad in suits of some gray material, flexible as cloth, but possessed of a certain metallic sheen, which completely covered them. The material had been stiffened to form a sort of helmet, with a broad band of transparent material set in at the eye level, so that the wearer could see to both sides, as well as to the front. I could also discern the outlines of menores—the crude and cumbersome type of thought-transference instrument used in that day—apparently built into the helmets. Belted around their middles were atomic pistols of the latest and most deadly model.

"For emergency use only, Commander," explained Inverness, observing my glance. His voice came quite clearly through the fabric which covered his face, so I gathered it was sufficiently porous to admit air for breathing. "This garment we wear will be sufficient protection, we believe; their mandibles are the weapons of the creatures we are to study, and this fabric should be ample protection against much more deadly weapons.

"Now, we shall walk to the shore of the river; if we are not molested—and I believe we shall not be, here, because the infiltration of water would quickly fill any passage sunk into this sandy earth so close to the river—please have your men bring our supplies to us, the boat first."

I nodded, and the three men walked through the open port, out across the gleaming, golden sand, to the water's edge. A number of great scarlet birds, with long, fiercely taloned legs, swooped about them curiously, croaking hoarsely and snapping their hawkish beaks, but offering no real molestation.

My men quickly carried their supplies to them, and before the last of the equipment had been delivered, the boat was assembled and afloat: a broad-beamed craft with hollow metal ribs, covered with some shining fabric which was unfamiliar to me. There was a small cabin forward and a small atomic

engine housed back near the stern.

I walked to the edge of the water and shook hands with Inverness and Brady; with Tipene I exchanged bows.

"I am sorry," said Inverness, "that I am facing you with what will, undoubtedly, be a monotonous and wearying vigil, for we shall probably be gone several weeks." He referred, I must explain, to a period of seven Earth days, a common unit of time on Earth.

"We'll make the best of it," I said, thinking of Correy, and how he would rage at such a period of inaction. "The best of luck to you!"

"Thanks; we'll remain no longer than necessary," smiled Inverness, smiling, his shining eyes already fixed on the river ahead.

"And that will be no short time," said the taciturn Brady. "Shall we start?"

CORREY raged. I had expected that, and I was in complete sympathy with him. Routine patrol was better than being earth-fast on this barren and uninteresting ball of mud.

"Have I your permission, sir," asked Correy on the fourth day, "to make a little tour of inspection and exploration? We might run into some fresh meat."

"I'm not sure that would be wise. These spider creatures—"

"Pardon me, sir," interrupted Correy eagerly, "but we could take a small landing force, armed with pistols and grenades. Even a field ray tube. Certainly we could handle anything which might turn up, then."

"And you rather hope that something will turn up, Mr. Correy?"

Correy grinned and shrugged his shoulders.

"It would break the monotony, wouldn't it, sir? And, too, if anything should happen to them"—and he glanced up the river, in the direction taken by the three scientists—"we'd know something about what had to contend with, wouldn't we?"

I'm not sure whether it was Correy's argument or my own venturesome disposition which swayed me, but immediately after lunch Correy and I, with a picked crew of men, started out from the ship.

Up until that time, we had confined our activities to the area between the ship and the shore—a small enough space at best. Now we rounded the shining blunt bow of the *Ertak* and headed inland, Correy and myself in the lead, the two portable disintegrator ray men immediately behind us, and the four other men of the party flanking the ray operators, two on each side.

It was hot, but the air was dry and invigorating. There was not a cloud visible in the sky. Far ahead was a low line of bluish, fronded, vegetation; whether small trees or some fern-like undergrowth, we could not determine. The ground between the ship and the line of vegetation was almost completely barren, the only growth being a lichenous sort of vegetation, gray-green in color.

HERE and there on the ground were the imprints of sharp, split hoofs, and Correy pointed these out to me with the comment that one of the guards had reported seeing a number of slender-legged animals roaming here in the starlight, apparently seeking water, but frightened by the strange apparition of our ship.

"From the way he described them, they're something like the deer we used to have on Earth," he said. "I've seen the fossils in the museums, and they had little sharp, split hoofs like—"

One of the men behind us shouted a warning at that instant, and we both whirled in our tracks. My

eyes fell instantly upon one of the strangest and most fearsome sights I have ever seen—and I have explored many strange and terrible worlds.

To our left, a huge circular section of the earth had lifted, and was swinging back on a hinge of glistening white fibers; a disk as great in diameter as the height of a man, and as thick as a man's body.

Where the disk had been, gaped a tunnel slanting down into the earth, and lined with the same glistening white fibers which covered the bottom of the disk, and hinged it in place. As I looked, there sprang from this tunnel a *thing* which I shall call a spider, yet which was too monstrous to be called by such an innocuous name.

It was rust red in color, with eight bristling legs, each tipped with three curved and tufted claws. On each side of its face was an armored mandible, tipped with shining fangs, and beside them, slender, six-jointed palps stretched hungrily.

The man who had seen the disk fly up opened fire without orders, and if he had not done so, some of us would not have returned to the ship. As it was, the atomic pistol whispered a steady stream of death which spattered the hairy body into an oozing pulp while it was still in mid-air. We leaped away, adding our fire to that of the alert guard who had first seen the apparition, and the spider, a twitching bundle of bespattered legs, fell on the spot where, an instant before, we had been.

Almost at the same instant two other great circular trap-doors swung up, just beyond the first, and their hairy, malignant occupants leaped toward us.

OUR pistols were ready, now, however, and the portable ray equipment was humming. The ray dissolved the first into a sifting of reddish dust, and our pistols slashed the other into ribbons.

"Back to the ship!" I shouted. "Look, Mr. Correy—there are hundreds of them!"

Before us score upon score of the great disks were lifting, and from the tunnel each revealed, monstrous rust-red bodies were pouring.

Our retreat covered by the two ray operators, we made our way swiftly to the ship. The great spiders, apparently alarmed by the magical disappearance of those of their comrades upon which the disintegrator ray rested, hesitated for a moment, their tremendous legs tensed, and their mandibles quivering with venomous anger, and then scuttled back into their holes, swinging their covers into place as they did so.

"We didn't do so badly, at that," grinned Correy rather breathlessly, as we gained the welcome shelter of the *Ertak*. "There are a score and more of those potlids still standing open—which means that many spiders didn't go back to tell about what happened to them."

"True—but had they waited until they could have surrounded us, the *Ertak* would have been shorthanded on the return trip. She would have been just two officers and six men short."

I have never seen a real expression of fear on Correy's face, but I came as close to it then as I ever did.

"They're tough customers," he said. "I never did like spiders, and I like them less, now. Those things stood half again as high as a man on their long legs, and could jump half the length of the ship."

"Hardly that," I said. "But I'll say this: if they're the gentry Inverness and the other two are investigating, they're welcome to their jobs!"

THERE wasn't any difficulty in keeping the men close to the ship after that, although waiting was a tedious and nerve-racking procedure.

We watched the spider-invested territory closely, however, and found that they fed at night upon the deer-like creatures Correy had mentioned. These unwary beasts, seeking water, were pounced upon the instant they came close to one of the hidden dens, and dragged swiftly out of sight. These observations were made by television, and Correy in particular would sit up half the night watching the creatures at work.

It was the second day of the fourth week that the sentry on duty called out that the boat was returning. We hastened down to the river to welcome them back, and I for one felt very much relieved.

But as the boat approached, I felt my fears returning, for there was only one man visible: Tipene.

The Zenian, bedraggled and weary, had lost or discarded the protective suit he had worn, and his lean, dark face was haggard.

"We leave immediately, Commander Hanson," he said as he disembarked. "Please give the necessary orders."

"But the others, sir? Where are Inverness and Brady?"

"Dead," said Tipene. "The Aranians got them. I barely escaped myself."

"And who are the Aranians?" I asked.

"The creatures which control this world. The spider creatures. Aranians, they call themselves. Do we leave at once, as I ordered?"

I thought quickly. I didn't like Tipene, and never had, and I fancied even less the high-handed attitude he was taking.

"I would suggest, sir, that you first give us an account of what has happened," I said shortly. "If there is anything we can do for the other two, perhaps—"

"I said they were dead," snapped Tipene. "You can't do anything for dead men, can you?"

"No. But we must have a report to enter on our log, you understand, and—I'll be very busy on the return trip. I'd like to have your story before we start." Somehow, I was suspicious of Tipene.

"Very well. Although I warn you I shall report your delay to your superiors." I shrugged, and led the way to the dining saloon which, small as it was, held chairs enough to seat us all.

"MY story is very brief," he said, when my three officers, Tipene, and myself were seated. "We proceeded up the river to a spot which we deemed suited as a point of entry into the country, and far enough from the ship so that its presence would not be alarming to the inhabitants.

"We permitted ourselves to be captured by the Aranians, knowing that our protective suits would prevent them from doing us serious bodily injury.

"You have seen the creatures—word of your adventure with them precipitated our misfortune, I might say here—and you know of their tunnels. We were taken down one of these tunnels, and into a still larger one. This in turn gave onto a veritable subterranean avenue, and, in time, led to a sort of underground metropolis."

"What?" growled Correy. "An underground city of those things?"

"I should like to ask that you do not interrupt," said Tipene coldly. "This metropolis was really no more than a series of cubicles, opening off the innumerable crisscrossing tunnels, and many layers in thickness. Passage from one level to another was by means of slanting tunnels.

"Some of these cubicles were very large, and utilized as storage rooms. Others were used for community activities, schools, entertainments, and so forth. We learned these things later, and explored them by means of our *ethon* lamps—the entire system of tunnels being, of course, in utter darkness.

"The first few days they were exceedingly hostile, and tried to tear us to pieces. When they could not do this, word was sent to some of their more learned members, and we were investigated. By the use of extra menores we had brought with us, we established a contact with their minds; first by the usual process of impressing pictures of our thoughts upon their minds, and later by more direct process.

"I WILL say nothing of the great scientific value of our discoveries, for you would neither understand nor appreciate them—although they will set the scientific universe agog," continued Tipene, his eyes gleaming suddenly with a triumphant light. "As we perfected communication, we convinced them that we were friendly, and we gained their complete confidence.

"They are a very ancient race. Very slowly have they come to their present stage of mental development, but they now possess reasoning faculties, a language—and a form of community government. There is much more, which, as I have said, would be of no significance to you.

"And then word came that beings like ourselves had attacked and killed many of the Aranians. The news had traveled slowly, for their system of communication is crude, but it reached the community center in which we were staying.

"Instantly, all was hostility. They felt they had been betrayed, and that we might betray them. Brady and Inverness, always rash and thoughtless, had discarded their protective suits, feeling sure they were perfectly safe, and they were torn to pieces.

"I, having a more scientific and cautious mind, doubting everything as a true scientific mind must, still wore my armor. By the liberal use of my pistol, I managed to fight my way to the surface, and to the boat. And now, Commander Hanson, will you start back, as I have ordered?"

I don't know what I would have said if I had not caught a peculiar glance from Correy, a glance accompanied by a significant, momentary closing of one eye (a gesture of Earth which means many things, and which is impossible to explain) and a slight nod.

"Very well, Mr. Tipene," I said shortly. "We'll start at once. Gentlemen, will you join me in the navigating room?"

CORREY was the last to arrive in the navigating room, and when he came in his eyes were dancing.

"I've just transferred Tipene to another stateroom, sir," he said. "A specially equipped stateroom."

"You what?"

"If you'll give orders, sir, for an immediate start, I'll tell you all about it," chuckled Correy. "Tipene says he's worn out, and is going to retire as soon as we start. And when he does—we'll learn something."

I nodded to Kincaide, and he gave the general attention signal. In a few seconds the outer sentry was recalled, and the exit port had been sealed. Slowly, the *Ertak* lifted.

"Maybe I'm wrong, sir," said Correy then, "but I'm convinced that Tipene is lying. Something's wrong; he was in altogether too much of a hurry to get away.

"So, before I transferred him to

the other stateroom, I concealed a menore under the mattress of his bunk, immediately under where his head will lie. It's adjusted to full strength, and I believe it will pick up enough energy to emanate what he's thinking about. We'll be in the next stateroom and see what we can pick up. How does that sound, sir?"

"Like something you'd cook up, Mr. Correy!" I said promptly. "And I believe, as you do, that if it works at all, we'll find out something interesting."

We equipped ourselves with menores, adjusted to maximum power, and silently filed into the stateroom adjacent to Tipene's.

He was moving about slowly, apparently undressing, for we heard first one boot and then another drop to the floor. And we could sense vague emanations, too faint to be intelligible, and unmistakably coming from him.

"Probably sitting on the edge of his bunk," whispered Correy. "When he lies down, it'll work like a charm!"

It did—almost too well. Suddenly we caught a strong emanation, in the Universal language.

"SURLY individual, that Hanson—didn't like my giving orders—hurt his dignity. But I had my own way, and that's all that's important. Seemed to be suspicious—they all were. Maybe I was a bit urgent—but I was afraid—those damned Aranians might have changed their spidery minds.

"They can't be very intelligent—to think I'd come back with tribute to pay for the spiders that fool Hanson and his men killed. Why, the ship's rays could wipe them all out, drill a hole in the ground—they didn't realize that. Thought that by holding Brady and that conceited Inverness for hostages, they'd be safe—and I'd be idiotic enough to not see this chance to get all the glory of the expedition for myself—instead of sharing it with those two. You're a quick thinker, Tipene—the true, ruthless, scientific mind. . . ."

I motioned for my officers to follow me, and we made our way, silent and grim-faced, to the navigating room.

"Nice, friendly lad, isn't he?" snarled Correy. "I thought there was something up. What are your plans, sir?"

"We'll go to the rescue of Inverness and Brady, of course. Mr. Correy, place Tipene under arrest, and bring him here at once. Mr. Kincaide, take over the ship; give orders to set her down where we were. And you, Mr. Hendricks, will take personal command of the forward ray tubes."

My officers sprang to obey orders, and I paced restlessly up and down the room, thinking. Just as the *Ertak* settled softly to earth, Correy returned with his prisoner. Two men stood on guard with drawn atomic pistols at the door.

"What's the meaning of this indignity, sir?" flared Tipene. He had dressed hurriedly, and was by no means an imposing spectacle. He drew himself up to his full height, and tried to look domineering, but there was fear in his eyes. "I shall report you—"

"You'll do no reporting, Tipene," I broke in coldly. "I'll do the reporting. You see, we know all about your little plan to desert your comrades, held by the Aranians as hostages, and to grasp all the glory of your findings for yourself. But—the plan doesn't work. We're going back."

TIPENE'S face drained a dirty yellow—a Zenian can never be actually pale.

"You . . . how. . . ." he floundered.

"A menore, under your pillow," I explained crisply. "But that doesn't matter, now. You will guide us to the spot where you found the Aranian city, and establish communication with the Aranians. When that's done, I'll give you further orders."

"And if I won't?" breathed Tipene, his teeth clenched in a shaking rage.

"But you will. Otherwise, we'll permit you to continue your explorations on this interesting little sphere—minus your protective suit."

Tipene stared at me with horror-stricken eyes. I think he saw that I meant exactly what I said—and I was not bluffing.

"I—I'll do it," he said.

"Then watch the river carefully," I ordered. "Kincaide, lift her just enough so we can get a good view of the river. Tipene will tell you where to set her down."

Navigating visually, Kincaide followed the winding course of the river, covering in a few minutes a distance it had taken the scientists a day to navigate.

"There—there is the place," said Tipene suddenly. "Just this side of th patch of vegetation."

"Very good. And remember what happens if you play any tricks," I nodded grimly. "Descend to within a few yards of the ground, Mr. Kincaide; we'll drop Tipene through the trap."

Correy hurried the prisoner away, and I ordered the trap in the bottom of the *Ertak's* hull to be opened.

"Now," I informed Tipene, "we'll let you down and you will establish communication with the Aranians. Tell them you have brought back, not tribute, but an enemy powerful enough to blast their entire city out of existence. It will be a simple matter for you to picture what an atomic grenade or one of the ship's rays will do. We'll arrange a little demonstration, if they're not convinced. And tell them that if they don't want to be wiped out, to bring Inverness and Brady to us, unharmed, as fast as their eight long legs will manage."

"They won't do it," whined Tipene. "They were very angry over the killing of those others. I'm just risking my life without the possibility of gain."

"You obey my orders, or you go down and stay there," I said abruptly. "Which?"

"I'll do as you say," he said, and the cage dropped with him swiftly.

AS soon as he was on the ground he reached up and adjusted his menore, peering around anxiously. For several minutes nothing happened, and then, the length of the ship away, one of the great trap-doors flew open. Out of it came one of the spiders, not rust-red like those we had seen, but faded to a dirty yellow. Close behind him were two of the rust-red Aranians, which fell in one on each side of the yellow chap.

The first Aranian, I presumed—and rightly—was one of the old learned members of the race. As he scuttled closer to the cowering Tipene, I saw that, amidst the bristles which covered his head and thorax, was a menore.

The three great spiders approached the ship warily, watching it constantly with huge, glittering eyes. A safe distance away they paused, and the old one fixed his attention on Tipene.

Evidently, what Tipene emanated caused the old fellow to become very angry; I could see his legs quivering, and his withered old mandibles fairly clattered.

"He says he won't do it!" Tipene called up to me, excitedly. "Says we can't reach them underground, and that they'll kill their hostages if we try to harm them."

"Ask him if there are any tunnels between the ship and the river," I commanded. "We'll demonstrate what we can do if he harms Inverness and Brady."

The two were in silent communion for a moment, and Tipene looked up and shook his head.

"No," he shouted. "No tunnels there. The water would seep into them."

"Then tell him to watch!"

I stepped back and pressed an attention signal.

"Mr. Hendricks?"

"Yes, sir!"

"Open up with the starboard tube, full power, concentrated beam, at any spot halfway between here and the river. At once."

"At once, sir!"

THE ray generators hummed instantly, their note deepening a moment later. The ray bit into the dry, sandy soil, boring steadily into the earth, making an opening over twice the height of a man in diameter.

The fine, reddish-brown dust of disintegration hung swirling above the mouth of the tunnel at first, and then, as the ray cut deeper into the earth, settled quickly and disappeared.

"Cease operation, Mr. Hendricks!" I commanded. "Keep the generators on, and stand by for further orders."

As soon as Hendricks' quick acknowledgment came back, I called down to Tipene.

"Tell your friend to inspect the little hole we drilled," I said. "Tell him to crawl down into it, if he wishes to see how deep it is. And then inform him that we have several ray tubes like this one, and that if he does not immediately produce his hostages, unharmed, we'll rise above his city and blast out a crater big enough to bury the *Ertak*."

Tipene nodded and communicated with the aged Aranian, who had cowered from the shaft in the earth disintegrated by our ray, and who now, very cautiously, approached it, flanked by his two far from eager guards.

At the lip of the slanting tunnel he paused, peered downward, and then, circling cautiously, approached the lidded tunnel whence he had emerged.

"He agrees," Tipene called up sullenly. "He will deliver Inverness and Brady to us. But we must come and get them; he says they have barricaded themselves in one of the cubicles, and will not permit any Aranian to approach. They still have their atomic pistols; the Aranians did not realize they were weapons."

"Very well; tell him a party from the ship will be ready in a few seconds. You will go with us as interpreter; you understand how to communicate with them."

I PRESSED Correy's attention signal and he answered instantly.

"Pick five good men for a landing party, two of them portable disintegrator ray operators, with equipment. The others will be provided with *ethon* lamps, pistols, and atomic grenades. Get the men to the trap as quickly as possible, please."

"Immediately, sir!"

I had the cage drawn up, and by the time I had secured my own equipment and returned, Correy was waiting with his men.

"One second, Mr. Correy, and we'll leave," I said, calling the navigating room. "Mr. Kincaide, I'm leaving you in command. We are going into the Aranian city to pick up Inverness and Brady. I anticipate no trouble, and if there is no trouble, we shall return within an hour. If we are not back within three hours, blast this en-

tire area with atomic grenades, and riddle it with the rays. Is that clear?"

"Yes, sir," said Kincaide.

"And then proceed immediately to Base and report. I have made an entry in the log regarding this expedition, as official evidence, if needed."

"Right, sir," said Kincaide, who was as near a perfect officer as I have ever seen.

"Mr. Correy, you've heard my orders. So have you, men. We're going underground, into a veritable warren of these spider creatures. If any of you wish to refuse this service, you have my permission to withdraw."

Not a man moved. Correy hardly repressed a grin. He knew the men he had picked for the job.

"Good!" I said, and signaled to the cage operator. Swiftly we dropped to earth, where Tipene and our three hairy guides awaited us.

THE descent into the white-lined tunnel was a terrifying experience. The lining was tough and fibrous, a sort of coarse material corresponding to the silk of a spider of normal size, although these strands were as large as my little finger, and strong as cables.

A close inspection of our guides added nothing to my confidence or bravery; their eight beady eyes, set at strategic spots about their heads, seemed unwinkingly ominous. And their mandibles, with fangs folded back like the blades of a pocket-knife, paired with their bristly palps, seemed like very capable weapons.

The Aranians ran ahead of us, our *ethon* lamps making strange and distorted shadows on the curving walls of the tunnel. Correy and I herded the unwilling Tipene just ahead of us, and the five picked men brought up the rear.

About forty feet down, the floor of the tunnel curved sharply and leveled off; a short distance farther on a number of other level tunnels merged with it, and the shape changed; from a tube perfectly circular in cross-section, it became a flattened oval, perhaps half again the height of a man, and at least three times that dimension in width.

Our party was joined by scores of other Aranians, who darted in from side passages; some going ahead, some closing in behind us, until the tunnel was filled with the peculiar brittle sound of their walking.

"They don't lack for numbers," muttered Correy softly. "Think they'll make trouble, sir?"

"Your guess is as good as mine. I showed them what the ray would do; I believe it threw a scare into the old chap. Did you tell them what we would do if they played any tricks, Tipene?"

"Certainly; my own life is endangered, isn't it?" snapped the Zenian.

"It certainly is," I told him grimly. "And not only by the spiders, if you make any suspicious moves."

WE went on without further conversation, until we came to the beginning of the cubicles Tipene had mentioned.

Each of these was closed, or could be closed, by a circular door such as those which concealed the outer entrance to the tunnels, save that these were swung on a side hinge. From the central passage we were following, smaller ones branched off in all directions: to the left, to the right; upward and downward. And all were lined with the cubicles, from which a constantly increasing army of Aranians emerged to accompany us.

We had gone but a short distance into the "city" when our ancient guide paused, turning to stare down a deserted passage.

"He says," grunted Tipene—as near a grunt as the high-pitched Zenian voice is capable of, "that they're down there. He asks that we go and get them; he is afraid. They have killed two of the Aranians already with their atomic pistols."

"For which I don't blame them in the least," said Correy. "I'd get as many as I could before I let them sink their mandibles into me."

"But I thought they were hostages, and being treated as such?"

"The Aranians got tired of waiting; some of the younger ones tried to do their own executing," explained Tipene. "The whole brood of them is in an ugly mood, the old fellow tells me. We were fools to come!"

I didn't argue the matter. You can't argue such a matter with a man like Tipene. Instead, I lifted my voice in a shout which echoed down the long corridors.

"Brady! Inverness! Can you hear us?"

For a moment there was no reply, and then, as our *ethon* lights played hopefully along the passage, a circular door opened, and Inverness, his pistol drawn, peered out at us. A moment later, both he and Brady were running toward us.

"Hanson!" cried Inverness. "Man, but we're glad to see a human face again—but why did you come? Now they've got us all."

"But they'll let us all go," I said, with a confidence I did not feel. "I've demonstrated to one of their leaders just what the *Ertak* can do—and will do—if we aren't aboard, safe and unhurt, in three hours."

"The young bloods don't obey well, though," said Brady, shaking his head. "Look at them, milling around there in the central passage! They didn't see your demonstration, whatever it was. They started for us some time back, and we had to rip a couple of them to pieces, and barricade ourselves."

"Well," said Correy grimly, "we'll soon find out. Ready to start back, sir?"

I TURNED to Tipene, who was staring at the packed mass of Aranians, who choked the tunnel in both directions.

"Tell them to make way," I commanded. "We're leaving."

"I've—I've been in communication with him," moaned Tipene. "And he hasn't any power over these youngsters. They want blood. Blood! They say the ship won't dare do anything so long as so many of us are here."

"It will, though," I snapped. "Kincaide will obey my orders to the letter. It'll be a wholesale slaughter, if we're not there by the specified time."

"I know! I know!" groaned Tipene. "But I can't make them understand that. They can't appreciate the meaning of such discipline."

"I believe that," put in Brady. "Their state of society is still low in the scale. You shouldn't have come, Commander. Better the two of us than the whole group."

"It may not be so simple as they think. Mr. Correy, shall we make a dash for it?"

"I'd be in favor of that, sir!" he grinned.

"Very well, you take three of the enlisted men, Mr. Correy, and give us a brisk rear-guard action when we get into the main passage—if we do. Use the grenades if you have to, but throw them as fast as possible, or we'll have the roof coming down on us.

"The two ray operators and myself will try to open a way, backed up by Inverness and Brady. Understand, everybody?" The men took the places I had indicated, nodding, and we stood at the mouth of the side tunnel, facing the main passage

which intersected it at a right angle. The mouth of the passage was blocked by a crowded mass of the spider creatures, evidently eager to pounce on us, but afraid to start an action in those narrow quarters.

As we came toward them, the Aranians packed about the entrance gave way grudgingly, all save two or three. Without an instant's hesitation, I lifted my pistol and slashed them into jerking pulp.

"Hold the ray," I ordered the two men by my side, "until we need it. They'll get a surprise when it goes into action."

WE needed it the moment we turned into the main corridor, for here the passage was broad, and in order to prevent the creatures from flanking us, we had to spread our front and rear guards until they were no more than two thin lines.

Seeing their advantage, the Aranians rushed us. At a word from me, the ray operators went into action, and I did what I could with my comparatively ineffective pistol. Between us, we swept the passage clean as far as we could see—which was not far, for the reddish dust of disintegration hung in the quiet air, and the light of our *ethon* lamps could not pierce it.

For a moment I thought we would have clear sailing; Correy and his men were doing fine work behind us, and our ray was sweeping everything before us.

Then we came to the first of the intersecting passages, and a clattering horde of Aranians leaped out at us. The ray operators stopped them, but another passage on the opposite side was spewing out more than I could handle with my pistol.

Two of the hairy creatures were fairly upon me before the ray swung to that side and dissolved them into dust. For an instant the party stopped, checked by these unexpected flank attacks.

And there would be more of these sallies from the hundreds of passages which opened off the main corridor; I had no doubt of that. And there the creatures had us: our deadly ray could not reach them out ahead; we must wait until we were abreast, and then the single ray could work upon but one side. Correy needed every man he had to protect our rear, and my pistol was not adequate against a rush at such close quarters. That fact had just been proved to me with unpleasant emphasis.

It was rank folly to press on; the party would be annihilated.

"Down this passage, men," I ordered the two ray operators. "We'll have to think up a better plan."

They turned off into the passage they had swept clean with their ray, and the rest of the party followed swiftly. A few yards from the main corridor the passage turned and ran parallel to the corridor we had just left. Doors opened off this passage on both sides, but all the doors were open, and the cubicles thus revealed were empty.

"WELL, sir," said Correy, when we had come to the dead end of the passage, "now what?"

"I don't know," I confessed. "If we had two ray machines, we could make it. But if I remember correctly, it's seven hundred yards, yet, to the first of the tunnels leading to the surface—and that means several hundred side passages from which they can attack. We can't make it."

"Well, we can try again, anyway, sir," Correy replied stoutly. "Better to go down fighting than stay here and starve, eh?"

"If you'll pardon me, gentlemen," put in Inverness, "I'd like to make

a suggestion. We can't return the way we came in; I'm convinced of that. It was the sheerest luck that Commander Hanson wasn't brought down a moment ago—luck, and excellent work on the part of the two ray operators.

"But an analysis of our problem shows that our real objective is to reach the surface, and that need not be done the most obvious way, by returning over the course by which we entered."

"How, then?" I asked sharply.

"The disintegrator ray you have there should be able to cut a passage for us," said Inverness. "Then all we need do is protect our rear while the operators are working. Once on the surface, we'll be able to fight our way to the ship, will we not?"

"Of course! You should be in command, Inverness, instead of myself." His was the obvious solution to our difficulty; once proposed, I felt amazingly stupid that the thought had not occurred to me.

I gave the necessary orders to the ray men, and they started immediately, boring in steadily at an angle of about forty-five degrees.

The reddish dust came back to us in choking clouds, and the Aranians, perhaps guessing what we were doing—at least one of their number had seen how the ray could tunnel in the ground—started working around the angle of the passage.

AT first they came in small groups, and our pistols readily disposed of them, but as the dust filled the air, and it became increasingly difficult to see their spidery bodies, they rushed us in great masses.

Correy and I, shoulder to shoulder, fired at the least sign of movement in the cloud of dust. A score of times the rushes of the Aranians brought a few of them scuttling almost to our feet; inside of a few minutes the passage was choked, waist high, with the riddled bodies—and still they came!

"We're through, sir!" shouted one of the ray operators. "If you can hold them off another fifteen minutes, we'll have the hole large enough to crawl through."

"Work fast!" I ordered. Even with Inverness, Brady, and the three of the *Ertak's* crew doing what they could in those narrow quarters, we were having a hard time holding back the horde of angry, desperate Aranians. Tipene was useless; he was cowering beside the ray operators, chattering at them, urging them to hurry.

Had we had good light, our task would have been easy, but the passage was choked now with dust. Our *ethon* lamps made little more than a dismal glow. The clattering Aranians were almost within leaping distance before we could see them; indeed, more than one was stopped in mid-air by a spray from one pistol or another.

"Ready, sir," gasped the ray man who had spoken before. "I think we've got it large enough, now."

"Good!" I brought down two scuttling Aranians, so close that their twitching legs fell in an untidy heap almost at my feet. "You go first, and protect our advance. Then the rest of you; Mr. Correy and I will bring up the—"

"No!" screamed Tipene, shouldering aside the ray men. "I. . . ." He disappeared into the slanting shaft, and the two ray men followed quickly. The three members of the crew went next; then Brady and Inverness.

Correy and I backed toward the freshly cut passage.

"I'll be right behind you," I snapped, "so keep moving!"

CORREY hesitated an instant; I knew he would have preferred the place of danger as the last man,

but he was too good an officer to protest when time was so precious. He climbed into the slanting passage the ray had cut for us, and as he did so, I heard, or thought I heard, a cry from beyond him, from one of those ahead.

I gave Correy several seconds before I followed; when I did start, I planned on coming fast, for in that shoulder-tight tube I would be utterly at the mercy of any who might attack from behind.

Fairly spraying the oncoming horde, I drove them back, for a moment, beyond the angle in the corridor; then I fairly dived into the tunnel and crawled as fast as hands and knees could take me toward the blessed open air.

I heard the things clatter into the space I had deserted. I heard them scratching frantically in the tunnel behind me, evidently handicapped by their long legs, which must have been drawn up very close to their bodies.

Light came pouring in on me suddenly, and I realized that Correy had won free. Behind me I could hear savage mandibles snapping, and cold sweat broke out on me. How close a terrible death might be, I had no means of knowing—but it was very close.

My head emerged; I drew my body swiftly out of the hole and snatched a grenade from my belt. Instantly I flung it down the slanting passage, with a shout of warning to my companions.

With a muffled roar, the grenade shook the earth; sent a brown cloud spattering around us. I had made a desperate leap to get away, but even then I was covered by the shower of earth.

I looked around. Trapdoors were open everywhere, and from hundreds of these openings, Aranians were scuttling toward us.

But the ray operators were working; not only the little portable machine, but the big projectors on the *Ertak*, five or six hundred yards away; laying down a deadly and impassable barrage on either side of us.

"THEY got Tipene, sir!" said Correy. "He dodged out ahead of the ray men, and two of them pounced on him. They were dragging him away, tearing him. The ray men wiped them out. Tipene was already dead—torn to fragments, they said. Back to the ship now, sir?"

"Back to the ship," I nodded, still rather breathless. "Let the ray men cover our retreat; we can take care of those between us and the ship with our pistols—and the *Ertak's* projectors will attend to our flanks. On the double, men!"

We fought every step of the way, in a fog of reddish dust from the big disintegrator rays playing on either side of us—but we made it, a torn, weary, and bedraggled crew.

"Quite an engagement, sir," gasped Correy, when we were safely inside the *Ertak*. "Think they'll remember this little visit of ours, sir?"

"I know we'll remember it, anyway," I said, shaking some of the dust of disintegration from my clothes. "Just at the moment, I'd welcome a tour of routine patrol."

"Sure, sir," grinned Correy. "So would I—until we were a day or two out from Base!"

A Plane for the Antarctic

AN airplane of unusual design and power has recently been completed for Lincoln Ellsworth by Jack Northrop, creator of the machine which Carl Ben Eielson and Sir Hubert Wilkins piloted over the North Pole. This new plane will be used by Ellsworth on an expedition which is expected to yield what has been termed the last great geographical discovery possible in the Antarctic.

It is planned to avoid the South Pole proper, the course having been calculated to pass 400 miles distant. However, in the 3,000-mile hop from Ross Sea to Weddell Sea and return, all but possibly 300 miles will be over territory never before reviewed by man. It is believed that it will be safe to land at any desired point on this journey with perfect safety on account of the newly devised flap gear with which the plane is equipped.

This flap gear is a movable portion of a wing section which may be operated at all times by the pilot. When not in use under special conditions, such as in a quick take-off or a slow landing, the flap gear folds into the wing proper and forms a part of the wing surface near to and attached to the trailing surface of the wing. The flap gear is controlled by winding a threaded gear in the cockpit. When in use it swings outward like the cover of a book causing drag and increased lift, both of which retard the forward motion of the machine. Floating ailerons, small control wings attached to the rear top of the large wings, are necessary for control in normal flight.

The over-all size of the airplane is not large. It is low-winged in type and measures only forty-eight feet in width and thirty-one feet in length, and when empty weighs 3,200 lbs. The appearance is characterized by power and strength. The construction is metal throughout. The wheeled under-carriage is practically concealed in streamlining, only a small surface of rubber appearing where the wheels rest on the ground. When in the Arctic regions, skis will be substituted for this landing gear. The cockpit is glassed in, and this section is carried around the sides past the navigator's seat, which is directly behind the pilot with whom he is at all times in direct communication. The streamlining is carried right through to the tail.

The casual observer might not notice that the plane has one feature which is asymetrical. While every line and surface of this superplane suggests harmony and balance, the vertical fin is slightly twisted to one side. This is to correct for the torque and drag of the propeller and slipstream caused by the sturdy 500-horsepower Wasp engine in flight. Although no flying is expected in adverse weather, all possible aids to safe navigation and blind flying are included in the equipment. These include a Sperry gyro, an artificial horizon swing, visible indication of the angle of the ship in flight and an inclinometer and rate-of-climb instrument which also indicates wing-dip. Of course the regular instruments for normal speed and temperature recording, oil pressure and gas consumption gauges, rev. counters, etc., are also included. By the use of the equipment it should be possible to fly the ship entirely blind.

Blind flying may be a part of the testing exercises through which the ship must be put before the Antarctic trip, but weather in those climes is usually such that if conditions are suitable for exploration, flying would not be undertaken at all. There are no halfway points between clement and very hostile weather.

Wanderer of Infinity

By Harl Vincent

LENVILLE! Bert Redmond had never heard of the place until he received Joan's letter. But here it was, a tiny straggling village cuddled amongst the Ramapo hills of lower New York State, only a few miles from Tuxedo. There was a prim, white-painted church, a general store with the inevitable gasoline pump at the curb, and a dozen or so of weatherbeaten frame houses. That was all. It was a typical, dusty cross-roads hamlet of the vintage of thirty years before, utterly isolated and apart from the rushing life of the broad concrete highway so short a distance away.

In the uncharted realms of infra-dimensional space Bert meets a pathetic figure—the Wanderer.

Bert stopped his ancient and battered flivver at the corner where a group of overalled loungers was gathered. Its asthmatic motor died with a despairing cough as he cut the ignition.

"Anyone tell me where to find the Carmody place?" he sang out.

No one answered, and for a moment there was no movement amongst his listeners. Then one of the loungers, an old man with a stubble of gray beard, drew near and regarded him through thick spectacles.

"You ain't aimin' to go up there alone, be you?" the old fellow asked in a thin cracked voice.

"Certainly. Why?" Bert caught a peculiar gleam in the watery old eyes that were enlarged so enormously by the thick lenses. It was fear of the supernatural that lurked there, stark terror, almost.

"Don't you go up to the Carmody place, young feller. They's queer doin's in the big house, is why. Blue lights at night, an' noises inside—an'—an' cracklin' like thunder overhead—"

"Aw shet up, Gramp!" Another of the idlers, a youngster with chubby features, and downy of lip and chin, sauntered over from the group, interrupting the old man's discourse. "Don't listen to him," he said to Bert. "He's cracked a mite—been seein' things. The big house is up yonder on the hill. See, with the red chimbley showin' through the trees. They's a windin' road down here a piece."

Bert followed the pointing finger with suddenly anxious gaze. It was not an inviting spot, that tangle of second-growth timber and underbrush that hid the big house on the lonely hillside; it might conceal almost anything. And Joan Parker was there!

The one called Gramp was screeching invectives at the grinning bystanders. "You passel o' young idjits!" he stormed. "I seen it, I tell you. An'—an' heard things, too. The devil hisself is up there—

He attacked it in vain with his fists.

an' his imps. We'd oughtn't to let this feller go. . . ."

Bert waited to hear no more. Unreasoning fear came to him that something was very much amiss up there at the big house, and he started the flivver with a thunderous barrage of its exhaust.

The words of Joan's note were vivid in his mind: "Come to me, Bert, at the Carmody place in Lenville. Believe me, I need you." Only that, but it had been sufficient to bring young Redmond across three states to this measly town that wasn't even on the road maps.

Bert yanked the bouncing car into the winding road that led up the hill, and thought grimly of the quirrel with Joan two years before. He had told her then, arrogantly, that she'd need him some day. But now that his words had proved true the fact brought him no consolation nor the slightest elation. Joan was there in this lonely spot, and she did need him. That was enough.

He ran nervous fingers through his already tousled mop of sandy hair—a habit he had when disturbed—and nearly wrecked the car on a gray boulder that encroached on one of the two ruts which, together, had been termed a road.

Stupid, that quarrel of theirs. And how stubborn both had been! Joan had insisted on going to the big city to follow the career her

brother had chosen for her. Chemistry, biology, laboratory work! Bert sniffed, even now. But he had been equally stubborn in his insistence that she marry him instead and settle down on the middle-Western fruit farm.

With a sudden twist, the road turned in at the entrance of a sadly neglected estate. The grounds of the place were overrun with rank growths and the driveway was covered with weeds. The tumble-down gables of a descrepit frame house peeped out through the trees. It was a rambling old building that once had been a mansion—the "big house" of the natives. A musty air of decay was upon it, and crazily askew window shutters proclaimed deep-shrouded mystery within.

Bert drew up at the rickety porch and stopped the flivver with its usual shuddering jerk.

AS if his coming had been watched for through the stained glass of its windows, the door was flung violently open. A white-clad figure darted across the porch, but not before Bert had untangled the lean six feet of him from under the flivver's wheel and bounded up the steps.

"Joan!"

"Bert! I—I'm sorry."

"Me too." Swallowing hard, Bert Redmond held her close.

"But I won't go back to Indiana!" The girl raised her chin and the old defiance was in her tearful gaze.

Bert stared. Joan was white and wan, a mere shadow of her old self. And she was trembling, hysterical.

"That's all right," he whispered. "But tell me now, what is it? What's wrong?"

With sudden vigor she was drawing him into the house. "It's Tom," she quavered. "I can't do a thing with him; can't get him to leave here. And something terrible is about to happen, I know. I thought perhaps you could help, even if—"

"Tom Parker here?" Bert was surprised that the fastidious older brother should leave his comfortable city quarters and lose himself in this God-forsaken place. "Sure, I'll help, dear—if I can."

"You can; oh, I'm sure you can," the girl went on tremulously. A spot of color flared in either cheek. "It's his experiments. He came over from New York about a year ago and rented this old house. The city laboratory wasn't secluded enough. And I've helped him until now in everything. But I'm frightened; he's playing with dangerous forces. He doesn't understand—won't understand. But I saw. . . ."

And then Joan Parker slumped into a high-backed chair that stood in the ancient paneled hall. Soft waves of her chestnut hair framed the pinched, terrified face, and wide eyes looked up at Bert with the same horror he had seen in those of the old fellow in the village. A surge of the old tenderness welled up in him and he wanted to take her in his arms.

"Wait," she said, swiftly rising. "I'll let you judge for yourself. Here—go into the laboratory and talk with Tom."

She pushed him forward and through a door that closed softly behind him. He was in a large room that was cluttered with the most bewildering array of electrical mechanisms he had ever seen. Joan had remained outside.

TOM PARKER, his hair grayer and forehead higher than when Bert had seen him last, rose from where he was stooping over a work bench. He advanced, smiling, and his black eyes were alight with genuine pleasure. Bert had anticipated a less cordial welcome.

"Albert Redmond!" exclaimed the older man. "This *is* a surprise. Glad to see you, boy, glad to see you."

He meant it, Tom did, and Bert wrung the extended hand heartily. Yet he dared not tell of Joan's note. The two men had always been the very best of friends—except in the matter of Joan's future.

"You haven't changed much," Bert ventured.

Tom Parker laughed. "Not about Joan, if that is what you mean. She likes the work and will go far in it. Why, Bert—"

"Sa-ay, wait a minute." Bert Redmond's mien was solemn. "I saw her outside, Tom, and was shocked. She insn't herself—doesn't look at all well. Haven't you noticed, man?"

The older man sobered and a puzzled frown creased his brow. "I have noticed, yes. But it's nonsense, Bert, I swear it is. She has been having dreams—worrying a lot, it seems. Guess I'll have to send her to the doctor?"

"Dreams? Worry?" Bert thought of the old man called Gramp.

"Yes. I'll tell you all about it—what we're working on here—and show you. It's no wonder she gets that way, I guess. I've been a bit loony with the marvel of it myself at times. Come here."

Tom led him to an intricate apparatus which bore some resemblance to a television radio. There were countless vacuum tubes and their controls, tiny motors belted to slotted disks that would spin when power was applied, and a double eyepiece.

"Before I let you look," Tom was saying, "I'll give you an idea of it, to prepare you. This is a mechanism I've developed for a study of the less-understood dimensions. The results have more than justified my expectations—they're astounding. Bert, we can actually see into these realms that were hitherto unexplored. We can examine at close range the life of these other planes. Think of it!"

"Life—planes—dimensions?" said Bert blankly. "Remember, I know very little about this science of yours."

"HAVEN'T you read the newspaper accounts of Einstein's researches and of others who have delved into the theory of relativity?"

"Sa-ay! I read them, but they don't tell me a thing. It's over my head a mile."

"Well, listen: this universe of ours—space and all it contains—is a thing of five dimensions, a continuum we have never begun to contemplate in its true complexity and immensity. There are three of its dimensions with which we are familiar. Our normal senses perceive and understand them—length, breadth and thickness. The fourth dimension, time, or, more properly, the time-space interval, we have only recently understood. And this fifth dimension, Bert, is something no man on earth has delved into—excepting myself."

"You don't say." Bert was properly impressed; the old gleam of the enthusiastic scientist was in Tom's keen eyes.

"Surest thing. I have called this fifth dimension the interval of oscillation, though the term is not precisely correct. It has to do with the arrangement, the speed and direction of movement, and the polarity of protonic and electronic energy charges of which matter is comprised. It upsets some of our old and accepted natural laws—one in particular. Bert, two objects *can* occupy the same space at the same time, though only one is perceptible to our earthbound senses. Their differently constituted atoms exist in the same location without interference—merely vibrating in different planes. There are many such planes in this fifth dimension of space, all around us, some actually inhabited. Each plane has a differ-

ent atomic structure of matter, its own oscillation interval of the energy that is matter, and a set of natural laws peculiar to itself. I can't begin to tell you; in fact, I've explored only a fraction. But here—look!"

TOM'S instrument set up a soft purring at his touch of a lever, and eery blue light flickered from behind the double eyepiece, casting grotesque shadows on walls and ceiling, and paling to insignificance the light of day that filtered through the long-unwashed windows.

Bert squinted through the hooded twin lenses. At first he was dazzled and confused by the rapidly whirling light-images, but these quickly resolved into geometric figures, an inconceivable number of them, extending off into limitless space in a huge arc, revolving and tumbling like the colored particles in an old-fashioned kaleidoscope. Cubes, pyramids and cones of variegated hues. Swift-rushing spheres and long slim cylinders of brilliant blue-white; gleaming disks of polished jet, spinning. . . .

Abruptly the view stabilized, and clear-cut stationary objects sprang into being. An unbroken vista of seamed chalky cliffs beside an inky sea whose waters rose and fell rhythmically yet did not break against the towering palisade. Waveless, glass-smooth, these waters. A huge blood-red sun hanging low in a leaden though cloudless sky, reflecting scintillating flecks of gold and purple brilliance from the ocean's black surface.

At first there was no sign of life to be seen. Then a mound was rising up from the sea near the cliff, a huge tortoiselike shape that stretched forth several flat members which adhered to the vertical white wall as if held by suction disks. Ponderously the thing turned over and headed up from the inky depths, spewing out from its concave under side an army of furry brown bipeds. Creatures with bloated torsos in which head and body merged so closely as to be indistinguishable one from the other, balanced precariously on two spindly legs, and with long thin arms like tentacles, waving and coiling. Spiderlike beings ran out over the smooth dark surface of the sea as if it were solid ground.

"JUPITER!" Bert looked up from the eyepiece, blinking into the triumphant grinning face of Tom Parker. "You mean to tell me these creatures are real?" he demanded. "Living here, all around us, in another plane where we can't see them without this machine of yours?"

"Surest thing. And this is but one of many such planes."

"They can't get through, to our plane?"

"Lord no, man, how could they?"

A sharp crackling peal of thunder rang out overhead and Tom Parker went suddenly white. Outside, the sky was cloudless.

"And that—what's that?" Bert remembered the warning of the old man of the village, and Joan's obvious fear.

"It—it's only a physical manifestation of the forces I use in obtaining visual connection, one of the things that worries Joan. Yet I can't find any cause for alarm...."

The scientist's voice droned on endlessly, technically. But Bert knew there was something Tom did not understand, something he was trying desperately to explain to himself.

Thunder rumbled once more, and Bert returned his eyes to the instrument. Directly before him in the field of vision a group of the spider men advanced over the pitchy sea with a curiously constructed cage of woven transparent material

which they set down at a point so close by that it seemed he could touch it if he stretched out his hand. The illusion of physical nearness was perfect. The evil eyes of the creatures were fastened upon him; tentacle arms uncoiled and reached forth as if to break down the barrier that separated them.

And then a scream penetrated his consciousness, wrenching him back to consideration of his immediate surroundings. The laboratory door burst open and Joan, pale and disheveled, dashed into the room.

TOM shouted, running forward to intercept her, and Bert saw what he had not seen before, a ten-foot circle of blue-white metal set in the floor and illuminated by a shaft of light from a reflector on the ceiling above Tom's machine.

"Joan—the force area!" Tom was yelling. "Keep away!"

Tom had reached the distraught girl and was struggling with her over on the far side of the disk.

There came a throbbing of the very air surrounding them, and Bert saw Tom and Joan on the other side of the force area, their white faces indistinct and wavering as if blurred by heat waves rising between. The rumblings and cracklings overhead increased in intensity until the old house swayed and creaked with the concussions. Hazy forms materialized on the lighted disk—the cage of the transparent, woven basket—dark spidery forms within. The creatures from that other plane!

"Joan! Tom!" Bert's voice was soundless as he tried to shout, and his muscles were paralyzed when he attempted to hurl himself across to them. The blue-white light had spread and formed a huge bubble of white brilliance, a transparent elastic solid that flung him back when he attacked it in vain with his fists.

Within its confines he saw Joan and her brother scuffling with the spider men, tearing at the tentacle arms that encircled them and drew them relentlessly into the basket-weave cage. There was a tremendous thump and the warping of the very universe about them all. Bert Redmond, his body racked by insupportable tortures, was hurled into the black abyss of infinity. . . .

* * *

THIS was not death, nor was it a dream from which he would awaken. After that moment of mental agony and ghastly physical pain, after a dizzying rush through inky nothingness, Bert knew suddenly that he was very much alive. If he had lost consciousness at all, it had been for no great length of time. And yet there was this sense of strangeness in his surroundings, a feeling that he had been transported over some nameless gulf of space. He had dropped to his knees, but with the swift return of normal faculties he jumped to his feet.

A tall stranger confronted him, a half-nude giant with bronzed skin and of solemn visage. The stalwart build of him and the smooth contours of cheek and jaw proclaimed him a man not yet past middle age, but his uncropped hair was white as the driven snow.

They stood in a spherical chamber of silvery metal, Bert and this giant, and the gentle vibration of delicately balanced machinery made itself felt in the structure. Of Joan and Tom there was no sign,

"Where am I?" Bert demanded. "And where are my friends? Why am I with you, without them?"

Compassion was in the tall stranger's gaze—and something more. The pain of a great sorrow filled the brown eyes that looked down at Bert, and resignation to a fate that was shrouded in ineffable mystery.

"Trust me," he said in a mellow

slurring voice. "Where you are, you shall soon learn. You are safe. And your friends will be located."

"*Will* be located! Don't you *know* where they are?" Bert laid hands on the big man's wrists and shook him impatiently. The stranger was too calm and unmoved in the face of this tremendous thing which had come to pass.

"I know where they have been taken, yes. But there is no need of haste out here in infra-dimensional space, for time stands still. We will find it a simple matter to reach the plane of their captors, the Bardeks, within a few seconds after your friends arrive there. My plane segregator—this sphere—will accomplish this in due season."

STRANGELY, Bert believed him. This talk of dimensions and planes and of the halting of time was incomprehensible, but somehow there was communicated to his own restless nature something of the placid serenity of the white-haired stranger. He regarded the man more closely, saw there was an alien look about him that marked him as different and apart from the men of Earth. His sole garment was a wide breech clout of silvery stuff that glinted with changing colors—hues foreign to nature on Earth. His was a superhuman perfection of muscular development, and there was an indescribable mingling of gentleness and sternness in his demeanor. With a start, Bert noted that his fingers were webbed, as were his toes.

"Sa-ay," Bert exclaimed, "who are you, anyway?"

The stranger permitted himself the merest ghost of a smile. "You may call me Wanderer," he said. "I am the Wanderer of Infinity."

"Infinity! You are not of my world?"

"But no."

"You speak my language."

"It is one of many with which I am familiar."

"I—I don't understand." Bert Redmond was like a man in a trance, completely under the spell of his amazing host's personality.

"It is given to few men to understand." The Wanderer fell silent, his arms folded across his broad chest. And his great shoulders bowed as under the weight of centuries of mankind's cares. "Yet I would have you understand, O Man-Called-Bert, for the tale is a strange one and is heavy upon me."

It was uncanny that this Wanderer should address him by name. Bert thrilled to a new sense of awe.

"But," he objected, "my friends are in the hands of the spider men. You said we'd go to them. Good Lord, man, I've got to do it!"

"You forget that time means nothing here. We will go to them in precise synchronism with the proper time as existent in that plane."

THE Wanderer's intense gaze held Bert speechless, hypnotized. A swift dimming of the sphere's diffused illumination came immediately, and darkness swept down like a blanket, thick and stifling. This was no ordinary darkness, but utter absence of light—the total obscurity of Erebus. And the hidden motors throbbed with sudden new vigor.

"Behold!" At the Wanderer's exclamation the enclosing sphere became transparent and they were in the midst of a dizzying maelstrom of flashing color. Brilliant geometric shapes, there were, whirling off into the vastness of space, as Bert had seen them in Tom Parker's instrument. A gigantic arc of rushing light-forms spanning the black gulf of an unknown cosmos. And in the foreground directly under the sphere was a blue-white disk, hori-

zontally fixed—a substantial and familiar object, with hazy surroundings likewise familiar.

"Isn't that the metal platform in my friend's laboratory?" asked Bert, marveling.

"It is indeed." The mellow voice of the Wanderer was grave, and he laid a hand on Bert's arm. "And for so long as it exists it constitutes a serious menace to your civilization. It is a gateway to your world, a means of contact with your plane of existence for those many vicious hordes that dwell in other planes of the fifth dimension. Without it, the Bardeks had not been able to enter and effect the kidnaping of your friends. Oh, I tried so hard to warn them—Parker and the girl—but could not do it in time."

A measure of understanding came to Bert Redmond. This was the thing Joan had feared and which Tom Parker had neglected to consider. The forces which enabled the scientist to see into the mysterious planes of this uncharted realm were likewise capable of providing physical contact between the planes, or actual travel from one to the other. Tom had not learned how to use the forces in this manner, but the Bardeks had.

"WE travel now along a different set of coordinates, those of space-time," said the Wanderer. "We go into the past, through eons of time as it is counted in your world."

"Into the past," Bert repeated. He stared foolishly at his host, whose eyes glittered strangely in the flickering light.

"Yes, we go to my home—to what *was* my home."

"To your home? Why?" Bert shrank before the awful contorted face of the Wanderer. A spasm of ferocity had crossed it on his last words. Some fearful secret must be gnawing at the big man's vitals.

"Again you must trust me. To understand, it is necessary that you see."

The gentle whir of machinery rose to a piercing shriek as the Wanderer manipulated the tiny levers of a control board that was set in the smooth transparent wall. And the rushing light-forms outside became a blur at first, then a solid stream of cold liquid fire into which they plunged at breakneck speed.

There was no perceptible motion of the sphere, however. It was the only object that seemed substantial and fixed in an intangible and madly gyrating universe. Its curved wall, though transparent, was solid, comforting to the touch.

Standing by his instrument board, the Wanderer was engrossed in a tabulation of mathematical data he was apparently using in setting the many control knobs before him. Plotting their course through infinity! His placid serenity of countenance had returned, but there was a new eagerness in his intense gaze and his strong fingers trembled while he manipulated the tiny levers and dials.

OUTSIDE the apparently motionless sphere, a never-ending riot of color surged swiftly and silently by, now swirling violently in great sweeping arcs of blinding magnificence, now changing character and driving down from dizzying heights as a dim-lit column of gray that might have been a blast of steam from some huge inverted geyser of the cosmos. Always there were the intermittent black bands that flashed swiftly across the brightness, momentarily darkening the sphere and then passing on into the limbo of this strange realm between planes.

Abruptly then, like the turning of a page in some gigantic book, the

swift-moving phantasmagoria swung back into the blackness of the infinite and was gone. Before them stretched a landscape of rolling hills and fertile valleys. Overhead, the skies were a deep blue, almost violet, and twin suns shone down on the scene. The sphere drifted along a few hundred feet from the surface.

"Urtraria!" the Wanderer breathed reverently. His white head was bowed and his great hands clutched the small rail of the control board.

In a daze of conflicting emotions, Bert watched as this land of peace and plenty slipped past beneath them. This, he knew, had been the home of Wanderer. In what past age or at how great a distance it was from his own world, he could only imagine. But that the big man who called himself Wanderer loved this country there was not the slightest doubt. It was a fetish with him, a past he was in duty bound to revisit time and again, and to mourn over.

Smooth broad lakes, there were, and glistening streams that ran their winding courses through well-kept and productive farmlands. And scattered communities with orderly streets and spacious parks. Roads, stretching endless ribbons of wide metallic surface across the countryside. Long two-wheeled vehicles skimming over the roads with speed so great the eye could scarcely follow them. Flapping-winged ships of the air, flying high and low in all directions. A great city of magnificent dome-topped buildings looming up suddenly at the horizon.

The sphere proceeded swiftly toward the city. Once a great air liner, flapping huge gossamerlike wings, drove directly toward them. Bert cried out in alarm and ducked instinctively, but the ship passed *through* them and on its way. It was as if they did not exist in this spherical vehicle of the dimensions.

"WE are here only as onlookers," the Wanderer explained sadly, "and can have no material existence here. We can not enter this plane, for there is no gateway. Would that there were."

Now they were over the city and the sphere came to rest above a spacious flat roof where there were luxurious gardens and pools, and a small glass-domed observatory. A woman was seated by one of the pools, a beautiful woman with long golden hair that fell in soft profusion over her ivory shoulders and bosom. Two children, handsome stalwart boys of probably ten and twelve, romped with a domestic animal which resembled a foxhound of Earth but had glossy short-haired fur and flippers like those of a seal. Suddenly these three took to the water and splashed with much vigor and joyful shouting.

The Wanderer gripped Bert's arm with painful force. "My home!" he groaned. "Understand, Earthling? This was my home, these my wife and children—destroyed through my folly. Destroyed, I say, in ancient days. And by my accursed hand—when the metal monsters came."

There was madness in the Wanderer's glassy stare, the madness of a tortured soul within. Bert began to fear him.

"We should leave," he said. "Why torment yourself with such memories? My friends. . . ."

"Have patience, Earthling. Don't you understand that I sinned and am therefore condemned to this torment? Can't you see that I *must* unburden my soul of its ages-old load, that I must revisit the scene of my crime, that others must see and know? It is part of my punishment, and you, perforce, must bear witness. Moreover, it is to help your friends and your world that I bring you here. Behold!"

A MAN was coming out of the observatory, a tall man with bronzed skin and raven locks. It was the Wanderer himself, the Wanderer of the past, as he had been in the days of his youth and happiness.

The woman by the pool had risen from her seat and was advancing eagerly toward her mate. Bert saw that the man hardly glanced in her direction, so intent was he upon an object over which he stood. The object was a shimmering bowl some eight or ten feet across, which was mounted on a tripod near the observatory, and over whose metallic surface a queer bluish light was playing.

It was a wordless pantomine, the ensuing scene, and Bert watched in amazement. This woman of another race, another age, another plane, was pleading with her man. Sobbing soundlessly, wretchedly. And the man was unheeding, impatient with her demonstrations. He shoved her aside as she attempted to interfere with his manipulations of some elaborate mechanical contrivance at the side of the bowl.

And then there was a sudden roaring vibration, a flash of light leaping from the bowl, and the materilization of a spherical vessel that swallowed up the man and vanished in the shaft of light like a moth in the flame of a candle.

At Bert's side, the Wanderer was a grim and silent figure, misty and unreal when compared with those material, emotion-torn beings of the rooftop. The woman, swooning, had wilted over the rim of the bowl, and the two boys with their strange amphibious pet splashed out from the pool and came running to her, wide-eyed and dripping.

The Wanderer touched a lever and again there was the sensation as of a great page turned across the vastness of the universe. All was hazy and indistinct outside the sphere that held them, with a rushing blur of dimly gray light-forms. Beneath them remained only the bright outline of the bowl, an object distinct and real and fixed in space.

"It was thus I left my loved ones," the Wanderer said hollowly. "In fanatical devotion to my science, but in blind disregard of those things which really mattered. Observe, O Man-Called-Bert, that the bowl is still existent in infra-dimensional space—the gateway *I* left open to Urtraria. So it remained while I, fool that I was, explored those planes of the fifth dimension that were all around us though we saw and felt them not. Only I had seen, even as your friend Tom has seen. And, like him, I heeded not the menace of the things I had witnessed. We go now to the plane of the metal monsters. Behold!"

THE sphere shuddred to the increased power of its hidden motors and another huge page seemed to turn slowly over, lurching sickeningly as it came to rest in the new and material plane of existence. Here, Bert understood now, the structure of matter was entirely different. Atoms were comprised of protons and electrons whirling at different velocities and in different orbits—possibly some of the electrons in reverse direction to those of the atomic structure of matter in Urtraria. And these coexisted with those others in the same relative position in time and in space. Ages before, the thing had happened, and he was seeing it now.

They were in the midst of a forest of conical spires whose sides were of dark glittering stuff that reminded Bert of the crystals of carborundum before pulverizing for commercial use. A myriad of deep colors were reflected from the

sharply pointed piles in the light of a great cold moon that hung low in the heavens above them.

In the half light down there between the circular bases of the cones, weird creatures were moving. Like great earthworms they moved, sluggishly and with writhing contortions of their many-jointed bodies. Long cylindrical things with glistening gray hide like armor plate and with fearsome heads that reared upward occasionally to reveal the single flaming eye and massive iron jaws each contained. There were riveted joints and levers, wheels and gears that moved as the creatures moved; darting lights that flashed forth from trunnion-mounted cases like the searchlights of a battleship of Earth; great swiveled arms with grappling hooks attached. They were mechanical contrivances—the metal monsters of which the Wanderer had spoken. Whether their brains were comprised of active living cells or whether they were cold, calculating machines of metallic parts, Bert was never to know.

"See, the gateway," the Wanderer was saying. "They are investigating. It is the beginning of the end of Urtraria—all as it occurred in the dim and distant past."

He gripped Bert's arm, pointing a trembling finger, and his face was a terrible thing to see in the eery light of their sphere.

A SHARPLY outlined circle of blue-white appeared down there in the midst of the squirming monsters. The sphere drifted lower and Bert was able to see that a complicated machine was being trundled out from an arched doorway in the base of one of the conical dwellings. It was moved to the edge of the light circle which was the bowl on that rooftop of Urtraria. The same bowl! A force area like that used by Tom Parker, an area existent in many planes of the fifth dimension simultaneously, an area where the various components of wave motion merged and became as one. The gateway between planes!

The machine of the metal monsters was provided with a huge lens and a reflector, and these were trained on the bowl. Wheels and levers of the machine moved swiftly. There came an orange light from within that was focused upon lens and reflector to strike down and mingle with the cold light of the bowl. A startling transformation ensued, for the entire area within view was encompassed with a milky diffused brightness in which two worlds seemed to intermingle and fuse. There were the rooftops of the city in Urtraria and its magnificent domes, a transparent yet substantial reality superimposed upon the gloomy city of cones of the metal monsters.

"Jupiter!" Bert breathed. "They're going through!"

"They are, Earthling. More accurately, they did—thousands of them; millions." Even as the Wanderer spoke, the metal monsters were wriggling through between the two planes, their enormous bodies moving with menacing deliberation.

On the rooftops back in Urtraria could be seen the frantic fleeing forms of humanlike beings—the Wanderer's people.

There was a sharp click from the control panel and the scene was blotted out by the familiar maze of geometric shapes, the whirling, dancing light-forms that rushed madly past over the vast arch which spanned infinity.

"WHERE were you at the time?" asked Bert. Awed by what he had seen and with pity in his heart for the man who had unwittingly let loose the horde of

metal monsters on his own loved ones and his own land, he stared at the Wanderer.

The big man was standing with face averted, hands clutching the rail of the control panel desperately. "I?" he whispered. "I was roaming the planes, exploring, experimenting, immersed in the pursuits that went with my insatiable thirst for scientific data and the broadening of my knowledge of this complex universe of ours. Forgetting my responsibilities. Unknowing, unsuspecting."

"You returned—to your home?"

"Too late I returned. You shall see; we return now by the same route I then followed."

"No!" Bert shouted, suddenly panicky at thought of what might be happening to Joan and Tom in the land of the Bardeks. "No, Wanderer—tell me, but don't show me. I can imagine. Seeing those loathsome big worms of iron and steel, I can well visualize what they did. Come now, have a heart, man; take me to my friends before. . . ."

"Ah-h!" The Wanderer looked up and a benign look came to take the place of the pain and horror which had contorted his features. "It is well, O Man-Called-Bert. I shall do as you request, for I now see that my mission has been well accomplished. We go to your friends, and fear you not that we shall arrive too late."

"Your—your mission?" Bert calmed immediately under the spell of the Wanderer's new mood.

"My mission throughout eternity, Earthling—can't you sense it? Forever and ever I shall roam infra-dimensional space, watching and waiting for evidence that a similar catastrophe might be visited on another land where warm-blooded thinking humans of similar mold to my own may be living out their short lives of happiness or near-happiness. Never again shall so great a calamity come to mankind anywhere if it be within the Wanderer's power to prevent it. And that is why I snatched you up from your friend's laboratory. That is why I have shown to you the—"

"Me, why me?" Bert exclaimed.

"Attend, O Earthling, and you shall hear."

The mysterious intangibilities of the cosmos whirled by unheeded by either as the Wanderer's tale unfolded.

"WHEN I returned," he said, "the gateway was closed forever. I could not reenter my own plane of existence. The metal monsters had taken possession; they had found a better and richer land than their own, and when they had completed their migration they destroyed the generator of my force area. They had shut me out; but I could visit Urtraria—as an outsider, as a wraith—and I saw what they had done. I saw the desolation and the blackness of my once fair land. I saw that—that none of my own kind remained. All, all were gone.

"For a time my reason deserted me and I roamed infra-dimensional space a madman, self-condemned to the outer realms where there is no real material existence, no human companionship, no love, no comfort. When reason returned, I set myself to the task of visiting other planes where beings of my own kind might be found and I soon learned that it was impossible to do this in the body. To these people I was a ghostly visitant, if they sensed my presence at all, for my roamings between planes had altered the characteristics of atomic structure of my being. I could no longer adapt myself to material existence in these planes of the fifth dimension. The orbits of electrons in the atoms comprising my substance had become fixed in a new and outcast oscillation interval. I had remained

away too long, I *was* an outcast, a wanderer—the Wanderer of Infinity."

There was silence in the sphere for a space, save only for the gentle whirring of the motors. Then the Wanderer continued:

"Nevertheless, I roamed these planes as a nonexistent visitor in so far as their peoples were concerned. I learned their languages and came to think of them as my own, and I found that many of their scientific workers were experimenting along lines similar to those which had brought disaster to Urtraria. I swore a mighty oath to spend my lifetime in warning them, in warding off a repetition of so terrible a mistake as I had made. On several occasions I have succeeded.

"And then I found that my lifetime was to be for all eternity. In the outer realms time stands still, as I have told you, and in the plane of existence which was now mine—an extra-material plane—I had no prospect of aging or of death. My vow, therefore, is for so long as our universe may endure instead of for merely a lifetime. For this I am duly thankful, for I shall miss nothing until the end of time.

"I VISITED planes where other monsters, as clever and as vicious as the metal ones who devastated Urtraria, were bending every effort of their sciences toward obtaining actual contact with other planes of the fifth dimension. And I learned that such contact was utterly impossible of attainment without a gateway in the realm to which they wished to pass — a gateway such as I had provided for the metal monsters and such as that which your friend Tom Parker has provided for the Bardeks, or spider men, as you term them.

"In intra-dimensional space I saw the glow of Tom Parker's force area and I made my way to your world quickly. But Tom could not get my warning: he was too stubbornly and deeply engrossed in the work he was engaged in. The girl Joan was slightly more susceptible, and I believe she was beginning to sense my telepathic messages when she sent for you. Still and all, I had begun to give up hope when you came on the scene. I took you away just as the spider men succeeded in capturing your friends, and now my hope has revived. I feel sure that my warning shall not have been in vain."

"But," objected Bert, "you've warned *me*, not the scientist of my world who is able to prevent the thing—"

"Yes, *you*," the Wanderer broke in. "It is better so. This Tom Parker is a zealot even as was I—a man of science thinking only of his own discoveries. I am not sure he would discontinue his experiments even were he to receive my warning in all its horrible details. But you, O Man-Called-Bert, through your love of his sister and by your influence over him, will be able to do what I can not do myself: bring about the destruction of this apparatus of his; impress upon him the grave necessity of discontinuing his investigations. You can do it, and you alone, now that you fully understand."

"Sa-ay! You're putting it up to me entirely?"

"Nearly so, and there is no alternative. I believe I have not misjudged you; you will not fail, of that I am certain. For the sake of your own kind, for the love of Joan Parker—you will not fail. And for me—for this small measure of atonement it is permitted that I make or help to make possible—"

"No, I'll not fail. Take me to them, quick." Bert grinned understandingly as the Wanderer straightened his broad shoulders and extended his hand.

There was no lack of substantiality in the mighty grip of those closing fingers.

AGAIN the sphere's invisible motors increased speed, and again the dizzying kaleidoscope of color swept past them more furiously.

"We will now overtake them—your friends," said the Wanderer, "in the very act of passing between planes."

"Overtake them. . . ." Bert mumbled. "I don't get it at all, this time traveling. It's over my head a mile."

"It isn't time travel really," explained the Wanderer. "We are merely closing up the time-space interval, moving to the precise spot in the universe where your friend's laboratory existed at the moment of contact between planes with your world and that of the Bardeks. We shall reach there a few seconds after the actual capture."

"No chance of missing?" Bert watched the Wanderer as he consulted his mathematical data and made new adjustments of the controls.

"Not the slightest; it is calculated to a nicety. We could, if we wished, stop just short of the exact time and would see the reoccurrence of their capture. But only as unseen observers—you can not enter the plane as a material being during your own actual past, for your entity would then be duplicated. Of course, I can not enter in any case. But, moving on to the instant *after* the event, as we shall do, you may enter either plane as a material being or move between the two planes at will by means of the gateway provided by Tom Parker's force area. Do you not now understand the manner in which you will be enabled to carry out the required procedure?"

"H-hm!" Bert wasn't sure at all. "But this moving through time," he asked helplessly, "and the change from one plane of oscillation to another—they're all mixed up—what have they to do with each other?"

"All five dimensions of our universe are definitely interrelated and dependent one upon the other for the existence of matter in any form whatsoever. You see—but here we are."

THE motors slowed down and a titanic page seemed to turn over in the cosmos with a vanishing blaze of magnificence. Directly beneath them glowed the disk of blue-white light that was Tom's force area. The sphere swooped down within its influence and came to rest.

"Make haste," the Wanderer said. "I shall be here in the gateway though you see me not. Bring them here, speedily."

On the one side Bert saw familiar objects in Tom's laboratory, on the other side the white cliff and the pitchy sea of the Bardek realm. And the cage of basket-weave between, with his friends inside struggling with the spider men. It was the instant after the capture.

"Joan! Tom!" Bert shouted.

A side of the sphere had opened and he plunged through and into the Bardek plane—to the inky surface of the sea, fully expecting to sink in its forbidding depths. But the stuff was an elastic solid, springy under his feet and bearing him up as would an air-inflated cushion. He threw himself upon the cage and tore at it with his fingers.

The whimpering screams of the spider men were in his ears, and he saw from the corner of his eye that other of the tortoiselike mounds were rising up out of the viscid black depths, dozens of them, and that hundreds of the Bardeks were closing in on him from all directions. Weapons were in their hands,

and a huge engine of warfare like a caterpillar tractor was skimming over the sea from the cliff wall with a great grinding and clanking of its mechanisms.

But the cage was pulling apart in his clutches as if made of reeds. With Joan in one encircling arm he was battling the spider men, driving swift short-arm jabs into their soft bloated bodies with devastating effect. And Tom, recovering from the first surprise of his capture, was doing a good job himself, his flailing arms scattering the Bardeks like ninepins. The Wanderer and his sphere, both doomed to material existence only in infra-dimensional space, had vanished from sight.

A bedlam rose up from the reinforcing hordes as they came in to enter the force area. But Bert sensed the guiding touch of the Wanderer's unseen hand, heard his placid voice urging him, and, in a single wild leap was inside the sphere with the girl.

With Joan safely in the Wanderer's care, he rushed out again for Tom. Then followed a nightmare of battling those twining tentacles and the puffy crowding bodies of the spider men. Wrestling tactics and swinging fists were all that the two Earthlings had to rely upon, but, between them, they managed to fight off a half score of the Bardeks and work their way back into the glowing force area.

"It's no use," Tom gasped. "We can't get back."

"Sure we can. We've a friend—here—in the force area."

Tom Parker staggered: his strength was giving out. "No, no, Bert," he moaned, "I can't. You go on. Leave me here."

"Not on your life!" Bert swung him up bodily into the sphere as he contacted with the invisible metal of its hull. Kicking off the nearest of the spider men, he clambered in after the scientist.

THE tableau then presented in the sphere's interior was to remain forever imprinted on Bert's memory, though it was only a momentary flash in his consciousness at the time: the Wanderer, calm and erect at the control panel, his benign countenance alight with satisfaction; Tom Parker, pulling himself to his feet, clutching at the big man's free arm, his mouth opened in astonishment; Joan, seated at the Wanderer's feet with awed and reverent eyes upturned.

There is no passing directly between the planes. One must have the force area as a gateway, and, besides, a medium such as the cage of the Bardeks, the orange light of the metal monsters, or the sphere of the Wanderer. Bert knew this instinctively as the sphere darkened and the flashing light-forms leaped across the blackness.

The motors screamed in rising crescendo as their speed increased. Then, abruptly, the sound broke off into deathly silence as the limit of audibility was passed. Against the brilliant background of swift color changes and geometric light-shapes that so quickly merged into the familiar blur, Bert saw his companions as dim wraithlike forms. He moved toward Joan, groping.

Then came the tremendous thump, the swinging of a colossal page across the void, the warping of the very universe about them, the physical torture and the swift rush through Stygian inkienss. . . .

"Farewell." A single word, whispered like a benediction in the Wanderer's mellow voice, was in Bert's consciousness. He knew that their benefactor had slipped away into the mysterious regions of intra-dimensional space.

* * *

RAISING himself slowly and dazedly from where he had been flung, he saw they were in Tom's laboratory. Joan lay over

there white and still, a pitiful crumpled heap. Panicky, Bert crossed to her. His trembling fingers found her pulse; a sobbing breath of relief escaped his lips. She had merely swooned.

Tom Parker, exhausted from his efforts in that other plane and with the very foundations of his being wrenched by the passage through the fifth dimension, was unable to rise. Only semiconscious, his eyes were glazed with pain, and incoherent moaning sounds came from his white lips when he attempted to speak.

Bert's mind was clearing rapidly. That diabolical machine of Tom's was still operating, the drone of its motors being the only sound in the laboratory as the inventor closed his mouth grimly and made a desperate effort to raise his head. But Bert had seen shapes materializing on the lighted disk that was the gateway between planes and he rushed to the controls of the instrument. That starting lever must be shifted without delay.

"Don't!" Tom Parker had found his voice; his frantic warning was a hoarse whistling gasp. He had struggled to his knees. "It will kill you, Bert. Those things in the force area—partly through—the reaction will destroy the machine and all of us if you turn it off. Don't, I say!"

"What then?" Bert fell back appalled. Hazily, the steel prow of a war machine was forming itself on the metal disk; caterpillar treads moved like ghostly shadows beneath. It was the vanguard of the Bardek hordes!

"Can't do it that way!" Tom had gotten to his feet and was stumbling toward the force area. "Only one way—during the change of oscillation periods. Must mingle other atoms with those before they stabilize in our plane. Must localize annihilating force. Must—"

What was the fool doing? He'd be in the force area in another moment. Bert thrust forward to intercept him; saw that Joan had regained consciousness and was sitting erect, swaying weakly. Her eyes widened with horror as they took in the scene and she screamed once despairingly and was on her feet, tottering.

"Back!" Tom Parker yelled, wheeling. "Save yourselves."

BERT lunged toward him but was too late. Tom had already burst into the force area and cast himself upon the semitransparent tank of the spider men. A blast of searing heat radiated from the disk and the motors of Tom's machine groaned as they slowed down under a tremendous overload.

Joan cried out in awful despair and moved to follow, but her knees gave way beneath her. Moaning and shuddering, she slumped into Bert's arms and he drew her back from the awful heat of the force area.

Then, horrified, they watched as Tom Parker melted into the misty shape of the Bardek war machine. Swiftly his body merged with the half-substance of the tank and became an integral part of the mass. For a horrible instant Tom, too, was transparent — a ghost shape writhing in a ghostly throbbing mechanism of another world. His own atomic structure mingled with that of the alien thing and yet, for a moment, he retained his Earthly form. His lean face was peaceful in death, satisfied, like the Wanderer's when they had last seen him.

A terrific thunderclap rent the air and a column of flame roared up from the force area. Tom's apparatus glowed to instant white heat, then melted down into sizzling liquid metal and glass. The laboratory was in sudden twilight gloom, save for the tongue of fire that licked up from the force area to the paneled ceiling. On the metal disk,

now glowing redly, was no visible thing. The gateway was closed forever.

WHAT more fearful calamity might have befallen had the machine been switched off instead, Bert was never to know. Nor did he know how he reached his parked flivver with Joan a limp sobbing bundle in his arms. He only knew that Tom Parker's sacrifice had saved them, had undoubtedly prevented a horrible invasion of Earth; and that the efforts of the Wanderer had not been in vain.

The old house was burning furiously when he climbed in under the wheel of his car. He held Joan very close and watched that blazing funeral pyre in wordless sorrow as the bereaved girl dropped her head to his shoulder.

A group of men came up the winding road, a straggling group, running—the loungers from the village. In the forefront was the beardless youth who had directed Bert, and, bringing up the rear, limping and scurrying, was the old man they had called Gramp. He was puffing prodigiously when the others gathered around the car, demanding information.

And the old fellow with the thick spectacles talked them all down.

"What'd I tell you?" he screeched. "Didn't I say they was queer doin's up here? Didnt I say the devil was here with his imps—an' the thunder? You're a passel o' idjits like I said—"

The roar of Bert's starting motor drowned out the rest, but the old fellow was still gesticulating and dancing about when they clattered off down the winding road to Lenville.

AN hour later Joan had fallen asleep, exhausted.

Night had fallen and, as mile after mile of smooth concrete unrolled beneath the flivver's wheels, Bert gave himself over to thoughts he had not dared to entertain in nearly two years. They'd be happy, he and Joan, and there'd be no further argument. If she still objected to living on the fruit farm, that could be managed easily. They'd live in Indianapolis and he'd buy a new car, a good one, to run back and forth. If, when her grief for Tom had lessened, she wanted to go on with laboratory work and such—well, that was easy, too. Only there would be no fooling around with this dimensional stuff—she'd had enough of that, he knew.

He drew her close with his free arm and his thoughts shifted—moved far out in infra-dimensional space to dwell upon the man of the past who had called himself Wanderer of Infinity. He who would go on and on until the end of time, until the end of all things, watching over the many worlds and planes. Warning peoples of human-like mold and emotions wherever they might dwell. Helping them. Atoning throughout infinity. Suffering.

Be Sure To Fill Out

The Reader's Ballot!

Cosmic Rays and the Atom

WITH recent developments in electrophysics as exposed by Dr. Arthur H. Compton, it begins to look as if the vast energy of the atom, heretofore practically inaccessible, would yield to investigation. German scientists have already succeeded in producing artificial gamma rays of five times the intensity of those emitted by radium and of strength which may be compared to the softer cosmic rays, when penetrating power is considered.

The nucleus of the beryllium atom has been bombarded by alpha particles from the element polonium, and carbon has been produced for the first time in a laboratory, Dr. Compton has shown.

During the past thirty years science has learned a great deal regarding the external portion of the atom, namely the electrons or negative charges of electricity which revolve about the central nucleus. It has been only recently, however, that the nucleus, or proton, has been investigated. It had been thought that the gamma rays of radium had their origin in the outer shell of the atom, but recent researches have shown them to come from the nucleus. It was pointed out that from the nucleus is emanated energy a million times as powerful as the energy resulting from ordinary chemical combination. The nature of this energy and its relation to atomic structure must be learned before a clear understanding of matter is gained.

Recent developments indicate that the beta particles given off during radioactivity do not travel with the same speed, though these elemental materials appear to be identical. This unexpected finding has led the Danish physicist Niels Bohr to propound a theory that the laws of the conservation of energy do not hold in this and other cases. Our recent knowledge of these phenomena has come to us through three channels, the study of radioactivity, investigation of optical spectra and, finally, increasing knowledge of the nature of the cosmic rays.

Condon and Camow have attempted to explain why some nuclei, for instance radium, disintegrate more rapidly than others, such as uranium. Alpha rays from the former are also ejected at higher speeds. Their theories would indicate that a "potential wall" exists around the nucleus which offers resistance to the penetration of the nucleus by foreign alpha particles and also prevents too ready escape of the alpha particles already present.

Comparing the alpha and gamma rays from radium it has been found that the gamma (light) rays from this element are emitted from the alpha particles in the nucleus and not, as heretofore thought, from electrons.

A remarkable experiment, heretofore considered impossible, has been accomplished by the German scientist Bothe. It consists in the production of artificial rays by the bombardment of beryllium by the emanation of polonium. These new rays are found to be much more penetrating than the natural gamma rays. The characteristics of the newly discovered rays have such similar properties to the cosmic rays that it is hoped that by a study of the former much regarding the nature of the latter will be disclosed.

Scientists are now well informed regarding the nature of the component parts of the nucleus. The problems which still confront them largely deal with the energy relationships which operate to bind the members together.

Invasion

By Murray Leinster

IT was August 19, 2037. The United Nations was just fifty years old. Televisors were still monochromatic. The Nidics had just won the World Series in Prague. Com-Pub observatories were publishing elaborate figures on moving specks in space which they considered to be Martian spaceships on their way to Earth, but which United Nations astronomers could not discover at all. Women were using gilt lipsticks that year. Heat-induction motors were still considered efficient prime movers. Thorn Hard was a high-level flier for the Pacific Watch. Bathyletis was the most prominent of nationally advertised diseases, and was to be cured by RO-17, "The Foundation of Personal Charm." Somebody named Nirdlinger was President of the United Nations, and somebody else named Krassin was Commissar of Commissars for the Com-Pubs. Newspapers were printing flat pictures in three colors only, and deploring the high cost of stereoscopic plates. And . . . Thorn Hard was a high-level flier for the Pacific Watch.

That is the essential point, of course—Thorn Hard's work with the Watch. His job was, officially, hanging somewhere above the twenty-thousand-foot level with his detector-screens out, listening for unauthorized traffic. And, the normal state of affairs between the Com-Pubs and the United Nations being one of highly armed truce, "unauthorized traffic" meant nothing more or less than spies.

The whole fighting fleet of the United Nations is caught in Kreynborg's marvelous, unique trap.

But on August 19th, 2037, Thorn Hard was off duty. Decidedly so. He was sitting on top of Mount Wendel, in the Rockies; he had a ravishingly pretty girl sitting on the same rock with him, and he was looking at the sunset. The plane behind him was an official Watch plane, which civilians are never supposed to catch a glimpse of. It had brought Thorn Hard and Sylva West to this spot. It waited now, half-hidden by a spur of age-eroded rock, to take them back to civilization again. Its G.C. (General Communication) phone muttered occasionally like the voice of conscience.

THE colors of the mountains changed and blended. The sky to westward was a glory of a myriad colors. Man and girl, high above the world, sat with the rosy glow of dying sunlight in their faces and watched the colors fade and shift into other colors and patterns even more ex-

He picked Sylva up in his arms and ran madly.

quisite. Their hands touched. They looked at each other. They smiled queerly, as people smile who are in love or otherwise not quite sane. They moved inevitably closer. . . .

And then the G.C. phone barked raucously:

"All Watch planes attention! Urgent! Extreme high-level traffic reported seven-ten line bound due east, speed over one thousand. All Watch planes put out all detectors and use extra vigilance. Note: the speed, course, and time of report of this traffic checks with Com-Pub observations of moving objects approaching Earth from Mars. This possibility should be considered before opening fire."

Thorn Hard stiffened all over. He got up and swung down to the stubby little ship with its gossamer-like wings of cellate. He touched the report button.

"Plane 257-A reporting seven-ten line. Thorn Hard flying. On Mount Wendel, on leave. Orders?"

He was throwing on the screens even as he reported. And the vertical detector began to whistle shrilly. His eyes darted to the dial, and he spoke again.

"Added report. Detector shows traffic approaching, bound due east, seven hundred miles an hour, high altitude. . . . Correction; six-fifty miles. Correction; six hundred." He paused. "Traffic is decelerating rapidly. I think, sir, this is the reported ship."

AND then there was a barely audible whining noise high in the air to the west. It grew in volume and changed in pitch. From a whine it became a scream. From a scream it rose to a shriek. Something monstrous and red glittered in the dying sunlight. It was huge. It was of no design ever known on earth. Wings supported it, but they were obscured by the blasts of forward rockets checking its speed.

It was dropping rapidly. Then lifting-rockets spouted flame to keep it from too rapid a descent. It cleared a mountain-peak by a bare two hundred feet, some two miles to the south. It was a hundred-odd feet in length. It was ungainly in shape, monstrous in conformation. Colossal rocket-tubes behind it now barely trickled vaporous discharges. It cleared the mountain-top, went heavily on in a steep glide downward, and vanished behind a mountain-flank. Presently the thin mountain air brought the echoed sound of its landing, of rapid-fire explosions of rocket-tubes, and then silence.

Thorn Hard was snapping swift, staccato sentences into the report-transmitter. Describing the clumsy glittering monster, its motion; its wings; its method of propulsion. It seemed somehow familiar despite its strangeness. He said so.

Then a vivid blue flame licked all about the rim of the world and was gone. Simultaneously the G.C. speaker crashed explosively and went dead. Thorn went on grimly, switching in the spare.

"A very violent electrical discharge went out from it then. A blue light seemed to flash all around the horizon at no great distance and my speaker blew out. I have turned on the spare. I do not know whether my sender is functioning—"

The spare speaker cut in abruptly at that moment:

"It is. Stay where you are and observe. A squadron is coming."

THEN the voice broke off, because a new sound was coming from the speaker. It was a voice that was unhuman and queerly horrible and somehow machine-like. Hoots and howls and whistles came from the speaker. Wailing sounds. Ghostly noises, devoid of consonants but broadcast on a wave-

length close to the G.C. band and therefore produced by intelligence, though unintelligible. The unhuman hoots and wails and whistles came through for nearly a minute, and stopped.

"Stay on duty!" snapped the G.C. speaker. "That's no language known on earth. Those are Martians!"

Thorn looked up to see Sylva standing by the Watch-plane door. Her face was pale in the growing darkness outside.

"Beginning duty, sir," said Thorn steadily, "I report that I have with me Miss Sylva West, my fiancée, in violation of regulations. I ask that her family be notified."

He snapped off the lights and went with her. The red rocket-ship had landed in the very next valley. There was a glare there, which wavered and flickered and died away.

"Martians!" said Thorns in fine irony. "We'll see when the Watch planes come! My guess is Com-Pubs, using a searchlight! Nervy!"

The glare vanished. There was only silence, a curiously complete and deadly silence. And Thorn said suddenly:

"There's no wind!"

There was not. Not a breath of air. The mountains were uncannily quiet. The air was impossibly still, for a mountain-top. Ten minutes went by. Twenty. The detector-whistles shrilled.

"There's the Watch," said Thorn in satisfaction. "Now we'll see!"

And then, abruptly, there was a lurid flash in the sky to northward. Two thousand feet up and a mile away, the unearthly green blaze of a hexynitrate explosion lit the whole earth with unbearable brilliance.

"Stop your ears!" snapped Thorn.

THE racking concussion-wave of hexynitrate will break human eardrums at an incredible distance. But no sound came, though the seconds went by. . . . Then, two miles away, there was a second gigantic flash. . . . Then a third. . . . But there was no sound at all. The quiet of the hills remained unbroken, though Thorn knew that such cataclysmic detonations should be audible at twenty miles or more. Then lights flashed on above. Two—three—six of them. They wavered all about, darting here and there. . . . Then one of the flying searchlights vanished utterly in a fourth terrific flash of green.

"The watch planes are going up!" said Thorn dazedly. "Blowing up! And we can't hear the explosions!"

Behind him the G.C. speaker barked his call. He raced to get its message.

"The Watch planes we sent to join you," said a curt voice he recognized as that of the Commanding General of the United Nations, "have located an invisible barrier by their sonic altimeters. Four of them seem to have rammed it and exploded without destroying it. What have you to report?"

"I've seen the flashes, sir," said Thorn unsteadily, "but they made no noise. And there's no wind, sir. Not a breath since the blue flash I reported."

A pause.

"Your statement bears out their report," said the G.C. speaker harshly. "The barrier seems to be hemispherical. No such barrier is known on Earth. These must be Martians, as the Com-Pubs said. You will wait until morning and try to make peaceful contact with them. This barrier may be merely a precaution on their part. You will try to convince them that we wish to be friendly."

"I don't believe they're Martians, sir—"

Sylva came racing to the door of the plane.

"Thorn! Something's coming! I hear it droning!"

Thorn himself heard a dull droning noise in the air, coming toward him.

"Occupants of the pocket-ship, sir," he said grimly, "seem to be approaching. Orders?"

"Evacuate the ship," snapped the G.C. phone. "Let them examine it. They will understand how we communicate and prepare to receive and exchange messages. If they seem friendly, make contact at once."

THORN made swift certain movements and dived for the door. He seized Sylva and fled for the darkness below the plane. He was taking a desperate risk of falling down the mountain-slopes. The droning drew near. It passed directly overhead. Then there was a flash and a deafening report. A beam of light appeared aloft. It searched for and found Thorn's plane, now a wreck. Flash after flash and explosion after explosion followed. . . .

They stopped. Their echoes rolled and reverberated among the hills. There was a hollow, tremendous intensification of the echoes aloft as if a dome of some solid substance had reflected back the sound. Slowly the rollings died away. Then a voice boomed through a speaker overhead, and despite his suspicions Thorn felt a queer surprise. It was a human voice, a man's voice, full of a horrible amusement.

"Thorn Hardt! Thorn Hardt! Where are you?" Thorn did not move or reply. "If I haff not killed you, you hear me," the voice chuckled. "Come to see me, Thorn Hardt. Der dome of force iss big, yes, but you can no more get out than your friends can get in. And now I haff destroyed your phones so you can no longer chat with them. Come and see me, Thorn Hardt, so I will not be bored. We will discuss der Com-Pubs. And bring der lady friend. You may play der chaperon!"

The voice laughed. It was not pleasant laughter. And the humming drone in the air rose and dwindled. It moved away from the mountain-top. It lessened and lessened until it was inaudible. Then there was dead silence again.

"By his accent, he's a Baltic Russian," said Thorn very grimly in the darkness. "Which means Com-Pubs, not Martians, though we're the only people who realize it; and they're starting a war! And we, Sylva, must warn our people. How are we going to do it?"

She pressed his hand confidently, but it did not look promising. Thorn Hard was on foot, without a transmitter, armed only with his belt-weapons and with a girl to look after, and moreover imprisoned in a colossal dome of force which hexynitrate had failed to crack. . . .

IT was August 20, 2037. There was a triple murder in Paris which was rumored to be the work of a Com-Pub spy, though the murderer's unquestionably Gallic touches made the rumor dubious. Newspaper vendor-units were screaming raucously, "Martians land in Colorado!" and the newspapers themselves printed colored-photos of hastily improvised models in their accounts of the landing of a blood-red rocket-ship in the widest part of the Rockies. The intercontinental tennis matches reached their semi-finals in Havana, Cuba. Thorn Hard had not reported to Watch headquarters in twelve hours. Quadruplets were born in Des Moines, Iowa. Krassin, Commissar of Commissars of the Com-Pubs, made a diplomatic inquiry about the rumors that a Martian spaceship had landed in North America. He asked that Com-Pub scientists be permitted to join in the questioning and examination of the

Martian visitors. The most famous European screen actress landed from the morning Trans-Atlantic plane with her hair dyed a light lavender, and beauty-shops throughout the country placed rush orders for dye to take care of the demand for lavender hair which would begin by mid-afternoon. The heavyweight champion of the United Nations was warned that his title would be forfeited if he further dodged a fight with his most promising contender. And. . . . Thorn Hard had not reported to Watch headquarters in twelve hours.

He was, as a matter of fact, cautiously parting some bushes to peer past a mountain-flank at the red rocket-ship. Sylva West lay on the ground behind him. Both of them weary to the point of exhaustion. They had started their descent from Mount Wendel at the first gray streak of dawn in the east. They had toiled painfully across the broken country between, to this point of vantage. Now Thorn looked down upon the rocket-ship.

IT lay a little askew upon the ground, seeming to be partly buried in the earth. A hundred feet and more in length, it was even more obviously a monstrosity as he looked at it in the bright light of day. But now it was not alone. Beside it a white tower reared upward. Pure white and glistening in the sunshine, a bulging, uneven shaft rose a hundred feet sheer. It looked as solid as marble. Its purpose was unguessable. There was a huge, fan-shaped space where the vegetation about the rocket-ship was colored a vivid red. In air-photos, the rocket-ship would look remarkably like something from another planet. But nearby, Thorn could see a lazy trickle of fuel-fumes from a port-pipe on one side of the monster. . . .

"That tower is nothing but cellate foam, which hardens. And Sylva! See?"

She came cautiously through the brushwood and looked down. She shivered a little. From here they could see beneath the bows of the rocket-ship. And there was a name there, in the Cyrillic alphabet which was the official written language of the Com-Pubs. Here, on United Nations soil, it was insolent. It boasted that the red ship came, not from an alien planet, but from a nation more alien still to all the United Nations stood for. The Com-Pubs—the Union of Communist Republics—were neither communistic nor republics, but they were much more dangerous to the United Nations than any mere Martians would have been.

"We'll have some heavy ships here to investigate, soon," said Thorn grimly. "Then I'll signal!"

HE flung back his head. High up and far away, beyond that invisible barrier against which Watch-planes had flung themselves in vain, there were tiny motes in mid-air. These were Watch planes too, hovering outside the obstacle they could not see, but which even hexynitrate bombs could not break through. And very far away indeed there was a swiftly-moving small dark cloud. As Thorn watched, that cloud drew close. As his eyes glowed, it resolved itself into its component specks. Small, two-man patrol-scouts. Larger, ten-man cruisers of the air. Huge, massive dreadnaughts of the blue. A complete combat-squadron of the United Nations Fighting Forces was sweeping to position about the dome of force above the rocket-ship.

The scouts swept forward in a tiny, whirling cloud. They sheered away from something invisible. One of them dropped a smoking object. It emitted a vast cloud of paper,

which the wind caught and swept away, and suddenly wrapped about a definite section of an arc. More and more of the tiny smoke-bombs released their masses of cloudlike stuff. In mid-air a dome began to take form, outlined by the trailing streaks of gray. It began to be more definitely traced by interlinings. An aerial lattice spread about a portion of a six-mile hemisphere. The top was fifteen thousand feet above the rocket-ship, twenty-five thousand feet from sea-level, as high as Mount Everest itself.

Tiny motes hovered even there, where the smallest of visible specks was a ten-man cruiser. And one of the biggest of the air-craft came gingerly up to the very inner edge of the lattice-work of fog and hung motionless, holding itself aloft by powerful helicopter screws. Men were working from a trailing stage —scientists examining the barrier even hexynitrate would not break down.

THORN set to work. He had come toilsomely to the neighborhood of the rocket-ship because he would have to do visual signaling, and there was no time to lose. The dome of force was transparent. The air fleet would be trying to communicate through it with the Martians they believed were in the rocket-ship. Sunlight reflected from a polished canteen would attract attention instantly from a spot near the red monster, while elsewhere it might not be observed for a long time. But, trying every radio wave-band, and every system of visual signaling, and watching and testing for a reply, Thorn's signal ought to be picked up instantly.

He handed his pocket speech-light receptor to Sylva. It is standard equipment for all flying personnel, so they may receive non-broadcast orders from flight leaders. He pointed to a ten-man cruiser from which shone the queer electric-blue glow of a speech-light.

"Listen in on that," he commanded. "I'm going to call them. Tell me when they answer."

He began to flash dots and dashes in that quaintly archaic telegraph alphabet Watch fliers are still required to learn. It was the Watch code call, sent over and over again.

"They're trying to make the Martians understand," said Sylva unsteadily with the speech-light receiver at her ear.

FLASH—flash—flash. . . . Thorn kept on grimly. The canteen top was slightly convex, so the sunlight-beam would spread. Accuracy was not needed, therefore. He covered and uncovered it, and covered and uncovered it. . . .

"They answered!" said Sylva eagerly. "They said 'Thorn Hard report at once!'"

There was a hissing, roaring noise over the hillside, where the red rocket-ship lay. Thorn paid no attention. He began to spell out, in grim satisfaction:

"R-o-c-k-e-t s-h-i-p i-s—"

"Look out!" gasped Sylva. "They say look out, Thorn!"

Then she screamed. As Thorn swung his head around, he saw a dense mass of white vapor rushing over the hillside toward them. He picked Sylva up in his arms and ran madly. . . .

The white vapor tugged at his knees. It was a variation of a vortex-stream. He fought his way savagely toward higher ground. The white vapor reached his waist. . . . It reached his shoulders. . . . He slung Sylva upon his shoulder and fought more madly still to get out of the wide white current. . . . It submerged him in its stinging, bitter flood. . . . As he felt himself collapsing his last conscious thought was the bitter realization that the

bulbous white tower had upheld television lenses at its top, which had watched his approach and inspection of the rocket-ship, and had enabled those in the red monster to accurately direct their spurt of gas.

His next sensation was that of pain in his lungs. Something that smarted intolerably was being forced into his nostrils, and he battled against the agony it produced. And then he heard someone chuckle amusedly and felt the curious furry sensation of electric anesthesia beginning. . . .

WHEN he came to himself again a machine was clicking erratically and there was the soft whine of machinery going somewhere. He opened his eyes and saw red all about him. He stirred, and he was free. Painfully, he sat up and blinked about him with streaming, gas-irritated eyes. He had been lying on a couch. He was in a room perhaps fifteen feet by twenty, of which the floor was slightly off-level. And everything in the room was red. Floor and walls and ceiling, the couch he had lain on and the furniture itself. There was a monstrous bulk of a man sitting comfortably in a chair on the other side of the room, pecking at a device resembling a writing-machine.

Thorn sat still for an instant, gaining strength. Then he flung himself desperately across the room, his fingers curved into talons.

Five feet, ten, with the slant of the floor giving him added impetus. . . . Then his muscles tightened convulsively. A wave of pure agony went through his body. He dropped and lay writhing on the floor, while the high-frequency currents of an induction-screen had their way with him. He was doubled into a knot by his muscles responding to the electric stimulus instead of his will. Sheer anguish twisted him. And the room filled with a hearty bellow of laughter. The monstrous whiskered man had turned about and was shaking with merriment.

He picked up a pocket-gun from beside him and turned off a switch at his elbow. Thorn's muscles were freed.

"Go back, my friendt," boomed the same voice that had come from a speaker the night before. "Go to der couch. You amuse me and you haff already been useful, but I shall haff no hesitation in killing you. You are Thorn Hardt. My name is Kreynborg. How do you do?"

"Where's my friend?" demanded Thorn savagely. "Where is she?"

"Der lady friendt? There!" The whiskered man pointed negligently with the pocket-gun. "I gafe her a bunk to slumber in."

THERE was a niche in the wall, which Thorn had not seen, Sylva was there, sleeping the same heavy, dreamless sleep from which Thorn himself had just awakened. He went to her swiftly. She was breathing naturally, though tears from the irritating gas still streaked her face and her skin seemed to be pinkened a little from the same cause.

Thorn swung around. His weapons were gone, of course. The huge man snapped on the induction-screen switch again and put down his weapon. With that screen separating the room into two halves, no living thing could cross it without either such muscular paralysis as Thorn had just experienced, or death. Coils in the floor induced alternating currents in the flesh itself, very like those currents used for supposed medical effects in "medical batteries," and "shockers."

"Be calm!" said Kreynborg, chuckling. "I am pleased to haff company. This is der loneliest spot in der Rockies. It was chosen for that reason. But I shall be here for

maybe months, and now I shall not be lonely. We of der Com-Pubs haff scientific resources such as your fools haff nefer dreamed of, but there is no scientific substitute for a pretty woman."

He turned again to the writing device. It clicked half a dozen times more, and he stopped. A strip of paper came out of it. He inserted it into the slot of another mechanism and switched on a standard G.C. phone as the paper began to feed. In seconds the room was filled with unearthly hoots and wails and whistles. They came from the device into which the paper was feeding, and they poured into the G.C. transmitter. They went on for nearly a minute, and ceased. Kreynborg shut off the transmitter.

"My code," he observed comfortably, "gifing der good news to Stalingrad. Everything is going along beautifully. I roused der fair Sylva and kissed her a few times to make her scream into a record, and I interpolated her screamings into der last code transmission. Your wise men think der Martians haff vivisected her. They are concentrating der entire fighting force of der United Nations outside der dome of force. And all for a few kisses!"

THORN was white with rage. His eyes burned with a terrible fury. His hands shook. Kreynborg chuckled again.

"Oh, she is unharmed—so far. I haff not much time now. Presently der two of you will while away der time. But not now."

He switched in the G.C. receiver and the room filled with a multitude of messages. Thorn sat beside Sylva, watching, watching, watching, while invisible machinery whined softly and Kreynborg listened intently to the crisp, curt official reports that came through on the Fighting Force band. Three combat-squadrons were on the spot now; One, Three and Eight. Four more were coming at fast cruising speed—four hundred miles an hour. One combat-squadron of the whole fleet alone would be left to cope with all other emergencies that might arise. . . . A television screen lighted up and Thorn could see where the lenses on the bulbous tower showed the air all about filled with fighting-planes, hovering about the dome of force like moths beating their wings against a screen. The strongest fighting-force in the world, helpless against a field of electric energy!

"It is amusing," chuckled Kreynborg, looking at the screen complacently. "Der dome of force is a new infention. It is a heterodyning of one frequency upon another at a predetermined distance. It has all der properties of matter except mass and a limit of strength. There is no limit to its strength! But it cannot be made except in a sphere, so at first it seemed only a defensif weapon. With it, we could defy der United Nations to attack us. But we wished to do more. So I proposed a plan, and I haff der honor of carrying it out. If I fail, Krassin disavows me. But I shall not fail, and I shall end as Commissar for der continent of North America!"

HE looked wisely at Thorn, who sat motionless.

"You keep quiet, eh, and wait for me to say something indiscreet? Ferry well, I tell you. We are in a sort of gold-fish globe of electric force. Your air fleet cannot break in. You know that! Also, if they were in they could not break out again. So I wait, fery patiently pretending to be a Martian until all your Fighting Force has gathered around in readiness to fight me. But I shall not fight. I shall simply make a new and larger gold-fish globe, outside of this one.

And then I go out and make faces at der Fighting Force of der United Nations imprisoned between der two of them—and then der Com-Pub fleet comes ofer!"

He stood up and put his hand on a door-knob.

"Is it not pretty?" he asked blandly. "In two weeks der air fleet will begin to starfe. In three, there will be cannibalism, unless der Com-Pubs accept der surrender. Imagine. . . ." He laughed. "But do not fear, my friendt! I haff profisions for a year. If you are amusing, I feed you. In any case I exchange food for kisses with der charming Sylva. It will be amusing to change her from a woman who screams as I kiss her, to one who weeps for joy. If I do not haff to kill you, you shall witness it!"

He vanished through a doorway on the farther side of the room. Instantly Thorn was on his feet. The dead slumber in which Sylva was sunk was wholly familiar. Electric anesthesia, used not only for surgery, but to enforce complete rest at any chosen moment. He dragged her from that couch to his own. He saw her stir, and her eyes were instantly wide with terror. But Thorn was tearing the couch to pieces. Cover, pneumatic mattress. . . . He ripped out a loosely-fitting frame-piece of steel.

"Quick, now," he said in a low tone, "I'm going to short the induction-screen. We'll get across it. Then—out the door!"

SHE struggled to her feet, terrified, but instantly game. Thorn slid the rod of metal across the stretch of flooring he had previously been unable to cross. The induced currents in the rod amounted to a short-circuit of the field. The rod grew hot and its paint blistered smokily. Thorn leaped across with Sylva in his wake. He pointed to the door, and she fled through it. He seized a chair, crashed it frenziedly into the television screen, and had switched on the G.C. phone when there was a roar of fury from Kreynborg. Instantly there was the spitting sound of a pocket-gun and in the red room the racking crash of a hexynitrate pellet. Nothing can stand the instant crash of hexynitrate. Its concussion-wave is a single pulsation of the air. The cellate diaphragm of the G. C. transmitter tore across from its violence and Thorn cursed bitterly. There was no way, now, of signaling. . . .

A second racking crash as a second pellet flashed its tiny green flame. Kreynborg was using a pocket-gun, one of those small terrible weapons which shoot a projectile barely larger than the graphite of a lead pencil, but loaded with a fraction of a milligram of hexynitrate. Two hundred charges would feed automatically into the bore as the trigger was pressed.

Thorn gazed desperately about for weapons. There was nothing in sight. To gain the outside world he had to pass before the doorway through which the bullets had come. . . . And suddenly Thorn seized the code-writer and the device which transmitted that code as a series of unearthly noises which the world was taking for Martian speech. He swung the two machines before the door in a temporary barrier. Whatever else Kreynborg might be willing to destroy, he would not shoot into them!

Thorn leaped madly past the door as Kreynborg roared with rage again. He paused only to hurl a chair at the two essential machines, and as they dented and toppled, he fled through the door and away.

SYLVA peered anxiously at him from behind a huge boulder. He raced toward her, expecting every second to hear the spitting of Kreynborg's pocket-gun. With

the continuous-fire stud down, the little gun would shoot itself empty in forty-five seconds, during which time Kreynborg could play it upon him like a hose that spouted death. But Thorn had done the hundred yards in eleven seconds, years before. He bettered his record now. The first of the little green flashes came when he was no more than ten yards from the boulder which sheltered Sylva. The tiny pellet had missed him by inches. Three more, and he was safe from pursuit.

"But we've got to get away!" he panted. "He can shoot gas here and get us again! He can cover four hundred yards with gas, and more than that with guns."

They fled down a tiny watercourse, midget figures in an infinity of earth and sky, scurrying frenziedly from a red slug-like thing that lay askew in a mountain valley. Far away and high above hung the war-planes of the United Nations. Big ones and little ones, hovering in hundreds about the outside of the dome of force they could neither penetrate nor understand.

A quarter of a mile. Half a mile. There was no sign from Kreynborg or the rocket-ship. Thorn panted.

"He can't reach us with gas, now, and it looks like he doesn't dare use a gun. They'd know he wasn't a Martian. At night he'll use that helicopter, though. If we can only make those ships see us. . . ."

THEY toiled on. The sun was already slanting down toward the western sky. At four—by the sun—Thorn could point to a huge air-dreadnaught hanging by lazily revolving gyros barely two miles away. He waved wildly, frantically, but the big ship drifted on, unseeing. The Fighting Force was no longer looking for Thorn and Sylva. They had been carried into the rocket-ship fourteen hours and more before. Sylva's screaming had been broadcast with the weird hoots and whistles the United Nations believed to be the language of interplanetary invaders. The United Nations believed them dead. Now a watch was being kept on the rocket-ship, to be sure, but it was becoming a matter-of-fact sort of vigilance, pending the arrival of the rest of the Fighting Force and the cracking of the dome of force by the scientists who worked on it night and day.

On level ground, Thorn and Sylva would have reached the edge of the dome in an hour. Here they had to climb up steep hillsides and down precipitous slopes. Four times they halted to make frantic efforts to attract the attention of some nearby ship.

It was six when they came upon the rim. There was no indication of its existence save that three hundred yards from them boughs waved and leaves quivered in a breeze. Inside the dome the air was utterly still.

"There it is!" panted Thorn.

Wearied and worn out as they were, they hurried forward, and abruptly there was something which impeded their movements. They could reach their hands into the impalpable barrier. For one foot, two, or even three. But an intolerable pressure thrust them back. Thorn seized a sapling and ran at the barrier as if with a spear. It went five feet into the invisible resistance and stopped, shot back out as if flung back by a jet of compressed air.

"He told the truth," groaned Thorn. "We can't get out!"

LONG shadows were already reaching out from the mountains. Darkness began to creep upward among the valleys. Far, far away a compact dark cloud appeared, a combat-squadron. It swept toward the dome and dissociated

into a myriad specks which were aircraft. The fliers already swirling about the invisible dome drew aside to leave a quadrant clear, and Combat-Squadron Seven merged with the rest, making the pattern of dancing specks markedly denser.

"With a fire," said Thorn desperately, "they'll come! Of course! But Kreynborg took my lighter!"

Sylva said hopefully:

"Don't you know some way? Rubbing sticks together?"

"I don't," admitted Thorn grimly, "but I've got to try to invent one. While I'm at it, you watch for fliers."

He searched for dry wood. He rubbed sticks together. They grew warm, but not enough to smoke, much less to catch. He muttered, "A drill, that's the idea. All the friction in one spot." He tugged at the ring under his lapel and the parachute fastened into his uniform collar shot out in a billowing mass of gossamer silk, flung out by the powerful elastics designed to make its opening certain. Savagely, he tore at the shrouds and had a stout cord. He made a drill and revolved it as fast as he could with the cord. . . .

A second dark cloud swept forward in the gathering dusk and merged into the mass of fliers about the dome. Five minutes later, a third. Dense as the air-traffic was, riding-lights were necessary. They began to appear in the deepening twilight. It seemed as if all the sky were alight with fireflies, whirling and swirling and fluttering here and there. But then the fire-drill began to emit a tiny wisp of smoke. Thorn worked furiously. Then a tiny flickering flame appeared, which he nursed with a desperate solicitude. Then a larger flame. Then a roaring blaze! It could not be missed! A fire within the dome could not fail to be noted and examined instantly!

A SEARCHIGHT beam fell upon them, limning him in a pitiless glare. Thorn waved his arms frantically. He had nothing with which to signal save his body. He flung his arms wide, and up, and wide again, in an improvised adaption of the telegraphic alphabet to gesticulation. He sent the watch call over and over again. . . .

A little cloud of riding-lights swept toward the dome from an infinite distance away. Darkness was falling so swiftly that they were still merely specks of light as they swept up to and seemed to melt into the swirling, swooping mass of fliers about the dome. . . .

Cold sweat was standing out on Thorn's face, despite the violence of his exertions. He was even praying a little. . . . And suddenly the searchlight beam flickered a welcome answer:

"W-e u-n-d-e-r-s-t-a-n-d. R-e-p-o-r-t."

Thorn flung his arms about madly, sending:

"G-e-t a-w-a-y q-u-i-c-k. C-o-m P-u-b-s h-e-r-e. W-i-l-l m-a-k-e c-t-h-e-r d-o-m-e o-u-t-s-i-d-e t-o t-r-a-p y-o-u."

The searchlight beam upon him flickered an acknowledgment. He knew what was happening after that. The G.C. phones would flash the warning to every ship, and every ship would dash madly for safety. . . . A sudden, concerted quiver seemed to go over the whirling maze of lights aloft. A swift, simultaneous movement of every ship in flight. Thorn breathed an agonized prayer. . . .

There was a flash of blue light. For one fractional part of a second the stars and skies were blotted out. There was a dome of flame above him and all about the world, of bright blue flame which instantly was—and instantly was not!

Then there was a ghastly blast of green. Hexynitrate going off. In

this glare were silhouetted a myriad motes in flight. But there was no noise. A second flare. . . . And then Thorn Hard, groaning, saw flash after flash after flash of green. Monster explosions. Colossal explosions. Terrific detonations which were utterly soundless, as the ships of the Fighting Force, in flight from the menace of which Thorn had warned them, crashed into an invisible barrier and exploded without cracking it.

IT was August 24th, 2037. For three days, now, seven of the eight great combat-squadrons of the United Nations Fighting Forces had been prisoners inside a monstrous transparent dome of force. There was a financial panic of unprecedented proportions in the great financial districts of New York and London and Paris. Martial law was in force in Chicago, in Prague, in Madrid, and in Buenos Aires. The Com-Pubs were preparing an ultimatum to be delivered to the government of the United Nations. Thorn and Sylva were hunted fugitives within the inner dome of force, which protected the red rocket-ship from the seven combat squadrons it had imprisoned. Newspaper vendor-units were shrieking, "Air Fleet Still Trapped!" and a prominent American politician was promising his constituents that if a foreign nation dared invade the sacred territories of the United Nations, a million embattled private planes would take the air. And he seemed not even trying to be humorous! Scientists were wringing their hands in utter helplessness before the incredible resistance of the dome. It had been determined that the dome was a force-field which caused particles charged with positive electricity to attempt to move in a right-hand direction about the source of the field, and particles charged with negative electricity to attempt to move in a left-hand direction. The result was that any effort to thrust an external object into the field of force was an attempt to tear the negatively charged electrons of every atom of that substance, free from the positively charged protons or nuclei. An object could only be passed through the field of force if it ceased to exist as matter—which was not an especially helpful discovery. And—Thorn Hard and Sylva were still hunted fugitives inside the inner dome.

THE sun was an hour high when the helicopter appeared to hunt for them by day. After the first time they had never dared light a fire, because Kreynborg in the helicopter searched the hills for a glow of light. But this day he came searching for them by day. Thorn had speared a fish for Sylva with a stick he had sharpened by rubbing it on a crumbling rock. He was working discouragedly on a little contrivance made out of a forked stick and the elastic from his parachute-pack. He was haggard and worn and desperate. Sylva was beginning to look like a hunted wild thing.

Two hundred yards from them the most formidable fighting force the world had ever seen littered the earth with gossamer-seeming cellate wings and streamlined bodies at all angles to each other. And it was completely useless. The least of the weapons of the air-fleet would have been a godsend to Thorn and Sylva. To have had one ship, even the smallest, where they were would have been a godsend to the fleet. But two hundred yards, with the dome of force between, made the fleet just exactly as much protection for Sylva as if it had been a million miles away.

The droning hum of the heli-

copter came across the broken ground. Now louder, now momentarily muted, its moments of loudness grew steadily more strong. It was coming nearer. Thorn gripped his spear in an instinctive, utterly futile gesture of defense. Sylva touched his hand.

"We'd better hide."

They hid. Thick brush concealed them utterly. The helicopter went slowly overhead, and they saw Kreynborg gazing down at the earth below him. Nearly overhead he paused. And suddenly Thorn groaned under his breath.

"It's the flagship!" he whispered hoarsely to Sylva. "Oh, what fools we were! The flagship! He knows the General would have brought it to earth opposite us, to question us!"

THE flagship was nearly opposite. To find the flagship was more or less to find where Thorn and Sylva hid. But they had not realized it until now.

The speaker in the helicopter boomed above their heads.

"Ah, my friends! I think you hear me. Answer me. I haff an offer to make."

Shivering, Sylva pressed close to Thorn.

"Der Com-Pub fleet is on der way," said Kreynborg, chuckling. "Sefen-eights of der United Nations fleet is just outside. You haff observed it. In six hours der Com-Pub fleet begins der conquest of der country and der execution of persons most antagonistic to our regime. But I haff still weary weeks of keeping der air fleet prisoner, until its personnel iss too weak from starfation to offer resistance to our soldiers. So I make der offer. Come and while away der weary hours for me, and I except you both from der executions I shall findt it necessary to decree. Refuse, and I get you anyhow, and you will regret your refusal fery much.'

Thorn's teeth ground together. Sylva pressed close to him.

"Don't let him get me, Thorn," she panted hysterically. "Don't let him get me. . . ."

THE droning, monotonous hum of the helicopter over their heads continued. The little flying-machine was motionless. The air was still. There was no other sound in the world.

Silence, save for the droning hum of the helicopter. Then something dropped. It went off with an inadequate sort of an explosion and a cloud of misty white vapor reared upward on a hillside and began to settle slowly, spreading out. . . . The helicopter moved and other things dropped, making a pattern. . . .

"The air's still," said Thorn quite grimly. "That stuff seems to be heavier than air. It's flowing downhill, toward the dome-wall. It will be here in five minutes. We've got to move."

Sylva seemed to be stricken with terror. He helped her to her feet. They began to move toward higher ground. They moved with infinite caution. In the utter silence of this inner dome, even the rustling of a leaf might betray them.

It was the presence of the air fleet within clear view that made the thing so horrible. The defenders of a nation were watching the enemy of a nation, and they were helpless to offer battle. The helicopter hummed and droned, and Kreynborg grinned and searched the earth below him for a sign of the man and girl who had been the only danger to his plan and now were unarmed fugitives. And there were four air-dreadnaughts in plain sight and five thousand men watching, and Kreynborg hunted, for sport, a comrade of the five thousand men and a woman every one

of them would have risked or sacrificed his life to protect.

He seemed certain that they were below him. Presently he dropped another gas-bomb, and another. And then Sylva stumbled and caught at something, and there was a crashing sound as a sapling wavered in her grasp. . . . And Thorn picked her up and fled madly. But billowing white vapor spouted upward before him. He dodged it, and the helicopter was just overhead and more smoke spouted, and more, and more. . . . They were hemmed in, and Sylva clung close to Thorn and sobbed. . . .

FIVE thousand men, in a thousand grounded aircraft, shouted curses that made no sound. They waved weapons that were utterly futile. They were as impotent as so many ghosts. Their voices made not even the half-heard whisper one may attribute to a phantom.

The fog-vapor closed over Thorn and Sylva as Kreynborg grinned mockingly at the raging men without the dome of force. He swept the helicopter to a position above the last view of Thorn and Sylva, and the downward-beating screws swept away the foggy gas. Thorn and Sylva lay motionless, though Thorn had instinctively placed himself in a position of defense above her.

The Fighting Force of the United Nations watched, raging, while Kreynborg descended deliberately into the area the helicopter-screws kept clear. While he searched Thorn's pockets reflectively and found nothing more deadly than small pebbles which might strike sparks, and a small forked stick. While he grinned mockingly at the raging armed men and made triumphant gesticulations before carrying Sylva's limp figure to the helicopter. While the little ship rose and swept away toward the rocket-plane.

It descended and was lost to view. Thorn lay motionless on the earth. Seven-eighths of the fighting force of the United Nations was imprisoned within the space between two domes of force no matter could penetrate. A ring two miles across and ten miles in outer diameter held the whole fleet of the United Nations paralyzed.

There was sheer panic through the Americas and Europe and the few outlying possessions of the United Nations. . . . And it was at this time, with a great fleet already half-way across the Pacific, that the Com-Pubs declared war in a fine gesture of ironic politeness. It was within half an hour of this time that the Seventh Combat Squadron—the only one left unimprisoned—dived down from fifty thousand feet into the middle of the Com-Pub fleet and went out of existence in twenty minutes of such carnage as is still stuff for epics.

The Seventh Squadron died, but with it died not less than three times as many of the foe. And then the Com-Pub fleet came on. Most of the original force remained; surely enough to devastate an undefended nation, to shatter its cities and butcher its people; to slaughter its men and enslave its women and leave a shambles and smoking ash-heaps where the very backbone of resistance to the red flag had been.

IT was twenty minutes before Thorn Hard stirred. His lungs seemed on fire. His limbs seemed lead. His head reeled and rocked. He staggered to his feet and stood there swaying dully. A vivid light, brighter than the sunshine, played upon him from the flagship of the fleet which now was helpless to defend its nation. Thorn's befogged brain stirred dazedly as the message came.

"Com-Pub fleet on way. Seventh Combat-Squadron wiped out. Na-

tion defenseless. You are only hope. For God's sake try something. Anything."

Thorn roused himself by a terrific effort. He managed to ask a question by exhausted gestures in the Watch visual alphabet.

"Kreynborg took her to rocket-ship," came the answer. "She recovered consciousness before being carried inside."

And Thorn, reeling on his feet and unarmed and alone, turned and went staggering up a hillside toward the rocket-ship's position. He could only expect to be killed. He could not even hope for anything more than to ensure that Sylva, also, die mercifully. Behind him he left an unarmed nation awaiting devastation, with a mighty air fleet speeding toward it at six hundred miles an hour.

As he went, though, some strength came to him. The fury of his toil forced him to breathe deeply, cleansing his lungs of the stupefying gas which, because it was visible as a vapor, had been carried in the rocket-ship. A visible gas was, of course, more consistent with the early pretense that the rocket-ship bore invaders from another planet. And Thorn became drenched with sweat, which aided in the excretion of the poisonous stuff. His brain cleared, and he recognized despair and discounted it and began to plan grimly to make the most of an infinitesimal chance. The chance was simply that Kreynborg had ransacked his pockets and ignored a little forked stick.

SCRAMBLING up a steep hillside with his face hardened into granite, Thorn drew that from his pocket again. Crossing a hilltop, he stripped off his coat.

He traveled at the highest speed he could maintain, though it seemed painfully deliberate. An hour after he had started, he was picking up small round pebbles wherever he saw them in his path. By the time the tall, bulbous tower was in sight he had picked up probably sixty such pebbles, but no more than ten of them remained in his pockets. They, though, were smooth and round and even, perhaps an inch in diameter, and all very nearly the same size. And he carried a club in his hand.

He went down the last slope openly. The television lenses on the tower would have picked him out in any case, if Kreynborg had repaired the screen. He went boldly up to the rocket-ship.

"Kreynborg!" he called. "Kreynborg!'

He felt himself being surveyed. A door came open. Kreynborg stood chuckling at him with a pocket-gun in his hand.

"Ha! Just in time, my friend! I haff been fery busy. Der Com-Pub fleet is just due to pass in refiew abofe der welcoming United Nations combat-squadrons. I haff been gifing them last-minute information and assurance that der domes of force are solid and can hold forefer. I haff a few minutes to spare, which I had intended to defote to der fair Sylva. But—what do you wish?"

"I'm offering you a bribe," said Thorn, his face a mask. "A billion dollars and immunity to cut off the outer dome of force."

Kreynborg grinned at him.

"It is too late. Besides being a traitor, I would be assassinated instantly. Also, I shall be Commissar for North America anyhow."

"Two billion," said Thorn without expression.

"No," said Kreynborg amusedly. "Throw away der club. I shall amuse myself with you, Thorn Hardt. You shall watch der progress of romance between me and Sylva. Throw away der club!"

The pocket-gun came up. Thorn threw away the club.

"What do you want, if two billion's not enough?"

"Amusement," said Kreynborg jovially. "I shall be bored in this inner dome, waiting for der air fleet to starfe. I wish amusement. And I shall get it. Come inside!"

HE backed away from the door, his gun trained on Thorn. And Thorn saw that the continuous-fire stud was down. He walked composedly into the red room in which he had once awakened. Sylva gave a little choked cry at sight of him. She was standing, desperately defiant, on the other side of the induction-screen area on the floor. There was a scorched place on the floor where Thorn had shorted that screen and the bar of metal had grown red-hot. Kreynborg threw the switch and motioned Thorn to her.

"I do not bother to search you for weapons," he said dryly. "I did it so short a time ago. And you had only a club. . . ."

Thorn walked stiffly beside Sylva. She put out a shaking hand and touched him. Kreynborg threw the switch back again.

"Der screen is on," he chuckled. "Console each other, children. I am glad you came, Thorn Hardt. We watch der grand refiew of der Com-Pub fleet. Then I turn a little infention of mine upon you. It is a heat-ray of fery limited range. It will be my method of wooing der fair Sylva. When she sees you in torment, she kisses me sweetly for der prifilege of stopping der heat-ray. I count upon you, my friend, to plead with her to grant me der most extrafagant of concessions, when der heat-ray is searing der flesh from your bones. I feel that she is soft-hearted enough to oblige you. Yes?"

He touched a button and the repaired television-screen lighted up. All the dome of mountains and sky was visible in it. There were dancing motes in sight, which were aircraft.

"I haff remofed all metal-work from that side of der room," added Kreynborg comfortably, "so I can dare to turn my back. You cannot short der induction-screen again. That was c'efer. But you face a scientist, Thorn Hardt. You haff lost."

A sudden surge of flying craft appeared on the television screen. The grounded fleet of the United Nations was taking to the air again. In the narrow, two-mile strip between the two domes of force it swirled up and up. . . . Kreynborg frowned.

"Now, what is der idea of that?" he demanded. He moved closer to the screen. The pocket-gun was left behind, five feet from his finger-tips. "Thorn Hardt, you will explain it!"

"They hope," said Thorn grimly, "your fleet can make gaps in the dome to shoot through. If so, they'll go out through those gaps and fight."

"Foolish!" said Kreynborg blandly. "Der only weapon we haff to use is der normal metabolism of der human system. Hunger!"

THORN reached into his pocket. Kreynborg was regarding the screen absorbedly. Through the haze of flying dots which was the United Nations fleet, a darkening spot to westward became visible. It drew nearer and grew larger. It was dense. It was huge. It was deadly. It was the Com-Pub battle-fleet, nearly equal to the imprisoned ships in number. It swept up to view its helpless enemy. It came close, so every man could see their only possible antagonists rendered impotent.

Such a maneuver was really

necessary, when you think of it. The Com-Pub fleet had encountered one combat-squadron of the United Nations fleet, and that one squadron, dying, had carried down three times its number of enemies. It was necessary to show the Com-Pub personnel the rest of their enemies imprisoned, in order to hearten them for the butchery of civilians before them.

Kreynborg guffawed as the Com-Pub fleet made its mocking circuit of the invisible dome. And Thorn raised his head.

"Kreynborg!" he said grimly. "Look!"

There was something in his tone which made Kreynborg turn. And Thorn held a little forked stick in his hand.

"Turn off the induction-screen, or I kill you!"

Kreynborg looked at him and chuckled.

"It is bluff, my friend," he said dryly. "I haff seen many weapons. I am a scientist! You play der game of poker. You try a bluff! But I answer you with der heat-ray!"

He moved his great bulk, and Thorn released his left hand. There was a sudden *crack* on Kreynborg's side of the room. A pebble a little over an inch in diameter fell to the floor. Kreynborg wavered, and toppled and fell. Three times more, his face merciless, Thorn drew back his arm, and three times Kreynborg's head jerked slightly. Then Thorn faced the panel on which the induction-screen switch was placed. Several times he thrust his hand through the screen and abruptly drew it back with pain, in an attempt to throw the switch. At last he was successful, and now he walked calmly across the room and bent over the motionless Kreynborg.

"Skull fractured," he said grimly. "All right, Sylva."

HE went through the narrow doorway beyond, picking up the pocket-gun as he went. There was a noise of whining machinery. Now Thorn was emptying pellets into the mechanism that controlled the dome of force. There was a crashing of glass. It stopped. There were blows and thumpings. That noise stopped too.

Thorn came back, his eyes glowing. He flung open the outer door of the rocket-ship, and Sylva went to him.

He pointed.

Far away, the Fighting Force of the United Nations was swirling upward. Like smoke from a campfire or winged ants from a tree-stump, they went up in a colossal, twisting spiral. Beyond the domes and above them. The domes existed no longer. Up and up, and up. . . . And then they swooped down upon the suddenly fleeing enemy. Vengefully, savagely, with all the fury of men avenging not only what they have suffered, but also what they have feared, the combat-squadrons of the United Nations fell upon the invaders. Green hexynitrate explosions lighted up the sky. Ear-cracking detonations reverberated among the mountains. There was battle there, and death and carnage and utter destruction. The roar of combat filled the universe.

Thorn closed the door and looked down at Kreynborg, who breathed stertorously, his mouth foolishly open.

"Our men will be back for us," he said shortly. "We needn't worry." Then he said, "Huh! He called himself a scientist, and he didn't know a sling-shot when he saw one!"

But then Thorn Hard dropped a weapon made of a forked stick and strong elastic from his chute-pack, and caught Sylva hungrily in his arms.

The Science Forum

Conducted by Carlyle Elliott, B.A., B.S., Ph.D.

The Colors in Light

Q.—(a) Will you explain the relation of the spectral colors to daylight?
(b) What often causes the light which is reflected by the edge of a mirror to be tinged with violet or orange?—A. P.

A.—(a) Light rays from the sun are of many wave-lengths because of the many incandescent elements of which the sun is composed. The composite of these many frequencies affects the eye, giving us the sensation of white light; yet if these many frequencies were separated from one another, as by a prism, we may analyze the light and determine visually just what colors, and hence what frequencies, are represented.

"Filters" (colored glasses) may also be employed to give a better idea of the phenomenon. When sunlight is passed through a blue glass the color of the glass offers resistance to the passage of all frequencies excepting those light rays which have a wave-length which corresponds to the color of the glass; hence we get the transmission of blue light only.

(b) The effect which you mentioned regarding the mirror edge is probably due to the frequent practice of using beveled edge glass in mirrors. This bevel then is in effect a prism which optically "sorts" the light which passes through it, resolving it into the various frequencies of which it is composed. I am at a loss to know why you specifically mention violet and orange, for it is certain that on closer observation you would find that all the spectral colors are represented.

A discussion of the principles involved in the refraction of light by a prism might make clearer the answers to your questions. When rays of light of different colors (wave-lengths) enter obliquely from one medium (the air) into another medium (the glass) and emerge again, the beam of light is bent, but the angular degree of bending is not the same for all wave-lengths. Therefore, the different colors are spread out like a fan—the longer rays being bent the least and the shorter ones the most. This gives us the full play of all the colors originally present in the light which entered the prism. There are also invisible rays which are bent by the prism. Beyond the violet end of the spectrum are to be found the ultra-violet rays, which, while invisible to our eyes, will affect a photographic plate very strongly, or will cause certain chemical substances to luminesce, thereby proving their presence. The infra-red rays at the other end of the spectrum are longer than any which give us an optical sensation, but may likewise be identified photographically.

In a beam of light from which all the colors excepting the violet and red were absorbed—such as would be the case if daylight were passed through a purple glass—a spectral analysis would produce a spectrum which was totally dark in the middle, the red and violet appearing at the ends in precisely the positions which they always occupy. Their position, when expressed in angular rotation or in wave-length units, will designate their color with a great deal more precision than is possible with optical color-sense alone. This principle, the basis of spectral analysis, makes possible very accurate determinations of the elements of which stars are composed.

Thermit

Q.—What is the explosive "thermit" mentioned in Murray Leinster's story, "The Fifth-dimension Tube," in the January issue of your excellent magazine—or is there any such thing after all? I believe there is.—R. L. T.

A.—Thermit is an actual substance invented by Hans Goldschmidt of Essen, Germany, in 1895. It is a mixture of powdered aluminum and iron oxide. These ingredients when brought together are capable of producing an exothermic reaction of great intensity, giving off heat which rises to the temperature of 2700° C. While the material is not now used as an explosive in the ordinary sense of the word, it is employed in welding and in the refining of certain metals. It has also been used by safe-crackers to fuse the sturdy steel from which safes are made.

The Depth of the Ocean

Q.—(a) How does the depth of the ocean at its deepest point compare with the tallest mountain ranges?
(b) What is the comparison between the total area of the land and of the sea? —P. R. B.

A.—(a) The depth of the ocean in its

deepest parts is not in the same order of magnitude with the tallest mountains. Probably the deepest portion of the ocean bed is located in what is known as the Philippine Trench, and soundings there run as deep as 34,210 feet. Mt. Everest, the highest mountain, has an altitude of 29,121 feet. Areas of great altitude on the earth are much less usual than are areas of great depth in the ocean. Likewise the high points of the earth are mere pinnacles, whereas the ocean depths are huge valleys of much greater volume.

(b) The ratio of exposed land area to the hydrosphere is 1:2.43.

Times

Q.—Will you explain the different kinds of time and for what purpose each is used? That is, for instance, solar time, siderial time and Greenwich mean time?—M. R.

A.—Solar time is time reckoned from the position of the sun in its trip across the heavens from dawn to sunset. As it takes 365-plus days for the earth to complete its trip around the sun, solar time is calculated upon this basis. If, however, a star is taken as the fixed point, the earth makes an extra rotation for each year, because, in the former case, the earth's trip around the sun subtracts one rotation or one day. It is upon this basis that siderial, or star time, is computed. If a fixed star were observed night after night it would soon become apparent that its position at a given hour each night would differ slightly from that of the preceding night until, after the elapse of a year (of sun time), this variation would have made a complete extra rotation or siderial day.

The difference between Greenwich mean time and Greenwich sun time is apparent when we consider that the earth does not move at a uniform rate in its trip around the sun. Planetary motion would be of constant velocity only if the orbit were a perfect circle. The path of the earth is an ellipse, and the velocity is decreased to a certain extent as the "flat" sides of the orbit are reached, and momentum is gathered as the "corners are turned." Normally it would be supposed that the sun would reach its highest point in Greenwich (or any other place) at exactly noon, sun time, and so it does; but, due to the different speed of the forward motion of the earth at different times of the year, it will be realized that these noons are not exactly twenty-four hours apart on the clock. The clock, or chronometer, is an instrument of constant velocity and therefore cannot be expected to regulate itself to this discrepancy in the length of the day. Therefore, "mean time," an approximation of solar time, has been devised.

Mean time is the kind of time which is universally used because of its constant units and because it is the only kind of time which a chronometer can keep track of. When, however, time is ascertained from the sun, the resulting computations can obviously give only solar time, which is based on variable days, hours, minutes and even seconds. To convert the solar time to mean time, equations are employed which require different factors determined by the position of the earth in its orbit.

The Electric Motor

Q.—What makes the inside part of an electric motor turn?—H. O. L.

A.—Magnetic attraction between the series of coils on the rotor for the series of the stationary coils which surround them. The current in a coil sets up a magnetic field which exerts an attraction for a field nearby. This induces the rotor to turn, bringing those two fields together—when, lo! the appeal has moved on to the next coils and the rotor feels impelled to turn some more. After that it is just one coil after another and so the rotor continues to spin.

Test Tube Muscle

Q.—I have read that they have living muscle growing in test tubes at the Rockefeller Institute, New York. How fast does it grow—R. D. W.

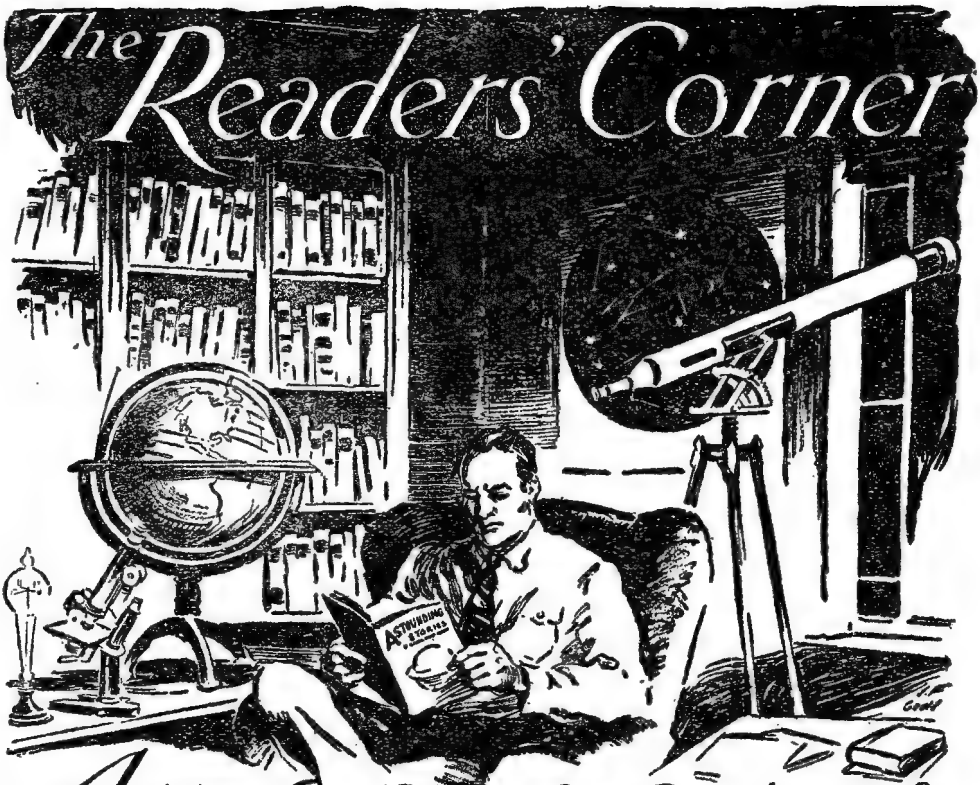
A.—It is true that at many places scientists have succeeded in growing various tissues of animal origin in what are known as "tissue cultures." It is common practice to use some embryonic material such as a piece of the heart muscle from an unhatched chicken egg. This material, when kept at the proper temperature and fed upon nutrient broth, grows quite rapidly. If given proper attention and free rein as far as food requirements are concerned, the muscle tissue would burst the walls of the laboratory in a few months. The muscle thus grown in tissue culture is similar in all respects to the muscle in the heart which gave it its origin. When viewed microscopically it is seen to undergo periodic rhythmic contractions which are similar in nature to heart beats in the living animal.

Earth-Bound Hydrogen

Q.—Why doesn't the hydrogen in steam fly to the stratosphere? I thought that hydrogen is the lightest gas.—S. T.

A.—Hydrogen is indeed the lightest gas, but when combined with oxygen to form water or steam it loses all of its physical properties and among them its extreme lightness.

The Readers' Corner



A Meeting Place for Readers of Astounding Stories

"Not Bad"

Dear Editor:

For several months I've been reading this mag until now it has become a habit. I've just finished the September issue of "our" mag, and it's not bad, dear sir, not bad.

"Loot of the Void" was something out of the ordinary. "Slaves of Mercury" was swell. I am waiting for the next part of "Two Thousand Miles Below"—it's swell. "Raiders of the Universe" was nifty, and last, and — [Censored.—Ed.] was "Disowned." But don't let the hard word dishearten you, Mr. Editor; you've got a great mag.—Irving Kosow, 3415 Fulton St., Brooklyn, N. Y.

Starting Young

Dear Editor:

Here is another letter from one of your youthful readers. The age, twelve, the cause, appreciation of those astounding stories, "The Affair of the Brains" and "Slaves of Mercury" by Anthony Gilmore and Nat Schachner. Get them to write in future issues.

I will now proceed to write down a poem I composed especially for Astounding Stories:

Astounding Stories

'Twas just a half year ago, when first I came to know
That interesting magazine, Astounding Stories.
When I came across that magazine, I said,
That is the magazine for me, Astounding Stories.
In weeks to come it brought me dreams of other worlds
And all such things, of great adventure out in space,
That is the readers' paradise, Astounding Stories.
It is a magazine which one can buy without too much
Uneconomy, Astounding Stories.

—Henry A. Ackerman, 5200 Maple Ave., Pimlico, Baltimore, Md.

Who'd Dare to Boo!

Dear Editor:

It seems to me that A. S. is going down the steps (or rather elevator) to debasement. What we need is more science in our stories; and you call them Science Fiction! In the September issue I read nothing but adventure, such as found in cheaper (yes, cheap!) maga-

zines. Adventure be — [Censored.—Ed.] Is the depression wrecking honest stories and authors?

Everything's gone wrong. The newsstands here haven't even saved my regular mags for me. I've given the agent so many pieces of my mind, now, that I'm almost a lame-brain! The only thing left for me to do is to take out a subscription.

Another story pertaining to Mercury decorated your magazine this month. How about your authors jumping over to Saturn for a while? They seem to run such things into the ground and I find it exceedingly debilitating.

But just about that time you break in with, "Which was first, the hen or the egg?" Now I ask you, is that nice? Did your readers ever look up the word nice in their dusty dictionaries? (I was using the synonym.)

I see we have a poet in our "Corner." (You certainly *cornered* him!) What was wrong with the last verse, Henry?

Everybody is asking for a sequel to some story, and I don't blame them. Some of them have been good stories and deserve a sequel.

The "Corner" was longer this time, much to my liking. Now all we need is a science question and answer department. I've got a lot I could ask you! (Not about a hen or an egg, either.)

How about a story featuring some great scientist—say, a chemist, seeing as my foremost hobby is chemistry, besides interplanetary travel—in the world of the future; huge super-cities, air traffic, etc.? I believe that type of story would fall in just right. The scientist is nothing but a true scientist, with a tough mug who devotedly follows him around as protection against enemies after his great knowledge. (And you ask me what I know about it. Did you ever attempt to write such a story? Well, it certainly looks hot.)

But by this time, I'm completely drowned out by boos from all parts of the floor.—Thos. P. Daniel, Box 247, Sidney, Nebr.

Thanks Very Much

Dear Editor:

I have just concluded my first copy of Astounding Stories, the September issue, and hereby declare it the best of its kind that I have ever read.

Being a newcomer to your "Corner," I do not feel privileged to agree or disagree with the older writers on the subject of authors and artists. However, I would like to say that no matter how bad an author or artist may be, someone will always like him, and no matter how good he may be, someone is bound to dislike him. Is it not so? [Aye. Aye. —Ed.]

I learned a lot of what has gone before from the letters in the "Corner," and agree heartily with Sidney Curtiss, of my own state, incidentally, when he says that these stories are not total impossibilities.

I am not a student of science, nor would that be my choice of a subject for intensive study, but I do know and understand something of the things scientists have done for us.

I have read that scientists are, even now, working on rays that will wipe out whole armies and towns at a single flash. The progress has been steady and the rays seem more and more a possibility. A friend of mine and I discussed the subject to some extent a few days ago and he seemed to feel that it would be a pretty horrible war where such methods were used. I cannot believe anything would be more horrible than the "modern methods" used in the World War. Why not end a war by a single flash of a ray gun and do away with the years of waiting and suffering?

But enough of that. I started out to tell you how much I liked A. S. Being an authoress myself and possessed of an imagination that runs wild at times, I found A. S. very much to my liking; but my imaginative creations are dwarfed by those contained in the stories of A. S.

I enjoyed "Slaves of Mercury" more than words can tell, and sincerely hope we have not read the last of Hilary Grendon and his companions, Joan, Grim and Nat. How about it?

Although I tuned in on the second installment of "Two Thousand Miles Below" I was favorably impressed and don't expect to miss another installment.

"Loot of the Void" sent shivers up and down my spine, but I liked it. "Disowned" and "Raiders of the Universe" were also interesting. The cover painted by Wesso was attractive, and if all his work is as good, I am sure I will like him.

All in all, I think that A. S. upholds the liking and respect I have for all the other Clayton publications, having read all of them extensively, including Strange Tales.

From now on I am one of your sincerest readers. Congratulations and overwhelming success to A. S.—Frances M. Boswell, 551 N. 32nd St., East St. Louis, Ill.

Scientipenpals Wanted

Dear Editor:

I read my first two issues of Astounding Stories recently and found them quite interesting in subject matter. They have a variety of scientific topics that would interest persons of different viewpoints. Several stories on different branches of science made my interest keener.

I enjoyed the "Corner." The opinions of the writers were stimulating and instructive.

I should appreciate corresponding with some A. S. readers. I am twenty-two, interested in astronomy, chemistry, wireless transmitting, life on planets, etc.; also sports.—Joseph Andrews, 1306 Jackson Ave., Windber, Pa.

Goes Roaming with A. S.

Dear Editor:

This is my first time to tell you how I feel about Astounding Stories. The desire came upon me after I had read the September issue. I have been reading A. S. for the last two years, but I don't remember one issue that has had such splendid stories, as far as Science Fiction is concerned. Let me make myself clear as to the fact that I am not an expert in astronomy or anything scientific. About two-thirds of the science in some stories goes over my head. The rest I comprehend enough so as to enjoy the story in an adventurous manner. The truth is, being handicapped and knowing that I will never go seeking adventure like many hope to some day during the course of their lives, I go roaming with Astounding Stories' authors. Science Fiction stories are my meat. So that is why I like "our" mag.

The stories I enjoyed are, in order of rank, "Slaves of Mercury," "Two Thousand Miles Below," the first serial I've ever liked, "Disowned"—great, "Loot of the Void"—some narrative—and last but not least, "Raiders of the Universe," one of the stories in which two-thirds of the science goes over my head, which is why it is named last.

I am 19 and would be glad to communicate with anyone by mail. Always anxious to learn from those who know. —Lucien Filiatrault, 695 Ninth Ave., New York, N. Y.

Young, but "Staunch"

Dear Editor:

I am a staunch reader of A. S. The first time I ever read the mag was when a sympathetic friend brought me a copy of it when I had the mumps. Immediately after I had recovered I went back for more. I read all he had, and now I buy my own copy.

I claim the privilege of being the youngest A. S. reader. Although I am 13 now, when I started reading the mag I was approximately 6 months past the austere age of 12. But, anyway, I like all kinds of science, especially astronomy.

The September issue was the best I have seen in a long time. "Slaves of Mercury"—well, well, well! Those poor Mercutians must have had a hard time resisting our gravity since the Earth is twice as big as Mercury, but it was a good story. Schachner knows how to turn 'em out. Sa-a-ay—how in the deuce do you pronounce Garboregg, anyway? And the rest of the names Wandrei has aren't exactly easy ones to pronounce: Aarbti and Sthabreh, etc. That mind-reading trick seemed to be an advantage, but Phobar turned it the other way.

"Disowned" was a nice story, but I wouldn't like to be Tristan. "Two Thousand Miles Below" is getting better and better. Dr. Bird is getting worse every day. It's too bad he didn't swallow some of those negative charges and choke to death. "Pirates of the Gorm" wasn't as good as Schachner usually makes them.

My favorite authors are: Meek (except in Dr. Bird stories), Gilmore, Starzl, Schachner, Cummings and Diffin.

I hand it to Louis Hogenmiller for what he said in the September issue. Those are my views exactly.—J. S. Smarts, New Bloomfield, Mo.

"Super-Scientific Kink"

Dear Editor:

Being one of those unfortunate (in other folks' estimation!) people that have a decided super-scientific kink in their mind, I have always had a craving for stories and books that deal with Science Fiction; but, unfortunately, I could only infrequently find any until one day, talking to a newly made friend, I discovered that he possessed mental deficiencies similar to mine and, above all, was a reader of a certain magazine called Astounding Stories. A few words as to the nature of the mag, and I commanded him, under penalty of death and other unhealthy punishments, to bring all his copies to me on the following day, which, luckily for himself, he did. So I read and read till I was blue in the face, and this, instead of satisfying my appetite, whetted it all the more—but I could find no new copies at our local news-agents. I hunted high and low without avail, and finally decided that the easiest way out of the difficulty was to subscribe direct. Therefore, I am sending a money order for a year's subscription.

The stories that appeal to me most are about travels to other planets; in any case, the more fantastic and (apparently) impossible the yarns, the better they go down. In fact, it is rather an impossibility for me to read authentic novels of the common or garden variety —I never do—just can't! "Poor fish," some people call me, but, well, it suits me, so I don't worry. Like some of your other readers, I wish your excellent mag were published at least twice a month or, better still, weekly—though what a hope! I would also like to see it profusely illustrated.

I expect that among your readers

there are many who, like me, are heading in a bee-line towards the asylum, and I shall only be too pleased if they will deign to communicate with me so that we could exchange a few ideas. One gets lots of fun in thrashing out various inventions and things appearing in your mag and discussing their possibilities, etc. Also, there may be some who would like to know more about this half-forgotten corner of Africa, and, well, maybe I can enlighten and disillusion them. For example, one does not see lions slinking along on the shadowy side of the street out here; at least, not as a rule. This fact will probably surprise you just as much as you would me if you suddenly were to turn round and say that the ancient custom of shooting up cities from horseback (vide "Buffalo Bill" stories) has been dropped. . . . Oh, shurrup.

Anyway, wishing you and your readers the best of luck in queer ideas.—D. de Woronin, Box 692, Salisbury, Southern Rhodesia, Africa.

Preferences

Dear Editor:

This is my first letter to your wonderful magazine, but let us hope that it will not be my last. Although quite young, I am a most enthusiastic reader, and eagerly look forward to each new issue.

Here is a list of the stories I preferred:

The outstanding serials were, in order of preference: "Earth, the Marauder," "Brigands of the Moon," "Wandl the Invader," "The Exile of Time" and "Brood of the Dark Moon." The worst by far was "Murder Madness." Of the novelettes I preferred "Dark Moon," "Slaves of Mercury," "The Finding of Haldgren," "The White Invaders," all the Hawk Carse yarns, "Monsters of Mars" and "The Atom-Smasher." Of the longer stories I preferred "The Pygmy Planet" and "Holocaust." "Hellhounds of the Cosmos" is by far the best Science Fiction story I have ever read, and I have read many.

My only hope is that future stories will maintain the same high-grade quality.—G. D. Vincent, Coode St., Como, Perth, Western Australia.

Suggestions

Dear Editor:

I have enjoyed reading your magazine for over two years and find it fascinating and very interesting.

Please print this first letter of mine. I desire to help you increase your circulation. To improve the mag I suggest the following:

1—Encourage the works of authors who have a real sense of humor.

2—Discourage authors whose stories lack originality of plot, or are unbalanced by too much description of terrible, grotesque, cruel entities.

3—I would like, and my friends would enjoy, stories containing the following themes: adventures into past times, such as the court of the Roman Caesar; the struggle between humanitarians on a better planet against the corrupt human organizations.—Morris Shelibow, 344 E. 51st St., Brooklyn, N. Y.

The Reader's Ballot

My favorite Science Fiction authors are, in the following order:

1.....

2.....

3.....

4.....

5.....

Name.....

Address.....

My question for The Science Forum is:

.....

.....

[Be sure and fill out the Story Preference Coupon on the other side—yes?]

A Dare

Dear Editor:

Once again, after a two months' wait, a new issue of Astounding Stories is in my hands. An excellent number it is, too. Wesso's cover is the best he has ever done for "our" magazine.

"Two Thousand Miles Below" is the best story Charles W. Diffin has written since "The Pirate Planet." It's a peach of a tale.

"The Passing of Ku Sui" is the best of the Hawk Carse stories—so far. Please don't say that it is the last of them. Of course, he will have many more adventures and have as his wife, Sandra, the daughter of Leithgow.

I read with much interest the other tales in the November issue. I enjoyed them all.

"The Reader Spanks" would be a good name for our get together department, wouldn't it? I notice some of the readers are getting poetic. How would you like a poem (?) from me some time? [We *dare* you!—Ed.]

I wish you would use finer print in the "Corner," so more letters could be printed.

Do you think that Astounding Stories will be published every month again soon? I hope you make such an announcement in the next issue. Also that our magazine will change to a larger size. I would like to see Paul, Wesso and Marchioni together in one issue.—Jack Darrow, 4224 N. Sawyer Ave., Chicago, Ill.

Scientipenpushers Wanted

Dear Editor:

Have you room for my opinion in the "Corner"? I think A. S. is pretty good, only it could be twice as thick and come out six times a month—and then that wouldn't be any too often.

Say, Editor, don't you ever let any of those big —— [Censored.—Ed.] talk you into printing reprints. If they read a story once, that's enough. Besides, why not save the old copies of A. S.? Then there would be no use for reprints.

Are there any readers who would like to correspond with me? I'll be glad to answer all letters promptly. Girls or boys around the age of sixteen, come on!—Claude Holf, Monroe City, Mo.

Invitations

Have you a question of scientific nature you've been saving up? Send it in, on the coupon provided. We cannot undertake to answer all questions, but we'll make room in the Science Forum for those of greatest general interest.

Fill out and send in the Vote of Preference and Reader's Ballot, too, of course; and, if you have time, come and join in our discussions of stories, authors, scientific principles and possibilities (yes, and the throwing of brickbats and roses) —everything that's of common interest in connection with Astounding Stories.

This is *your* magazine, and you're cordially invited to make full use of it.

The Editor.

My Story Preferences in This Issue

I enjoyed these stories most:	Remarks:
1.....	.....
2.....	.....
3.....	.....
I enjoyed these stories least:	**Remarks:**
1.....	.....
2.....	.....
3.....	.....

Name.....

Address.....

[It will help us know your story preferences if you will fill out and mail this coupon to Astounding Stories, 155 E. 44th St., New York City. Thank you!]

DEAFNESS IS MISERY

Many people with defective hearing and Head Noises enjoy conversation, go to Theatre and Church because they use Leonard Invisible Ear Drums which resemble Tiny Megaphones fitting in the Ear entirely out of sight. No wires, batteries or head piece. They are inexpensive. Write for booklet and sworn statement of the inventor who was himself deaf.

A. O. LEONARD, Inc., Suite 883, 70 5th Ave., New York

ARMY-NAVY Bargains

Haversacks .75	Cart. belt 60
Machete-bolo . . $1.50	Flint pistol . . . $6.95
Army saddle . . $9.85	M/L shot gun. . $4.85

Springfield cal. 30/06 rifle, 24" barrel now $16.50
1933 catalog, 364 pages of pistols, armor, guns, daggers, etc., mailed for 50 cents. New special circular for 3c stamp.
Established 1865.
Francis Bannerman Sons, 501 B'way, N. Y. City

FOREST JOBS

easily available. $125-$200 per month.
Permanent. Cabin, hunt, trap, patrol.
Get details immediately
Rayson Service Bureau, Dept. K-52, Denver, Colo.

Banish the craving for tobacco as thousands have. Make yourself free and happy with Tobacco Redeemer. Not a substitute, not habit forming. Write for free booklet telling of injurious effect of tobacco and dependable, easy way to relieve the craving many men have.

Newell Pharmacal Co.
Dept. 600, St. Louis, Mo.

FREE BOOK

Going to Washington March 4th?

Whether you go or not Read the

POLITICIAN'S NUMBER of

15c BUNK 15c

"The Successful Humor Magazine"

There's a laugh on every page and you can have a 3-months' trial subscription if you wish to mail us a quarter!

BUNK 155 East 44th St., N. Y. C.
"A Clayton Magazine"

HYPNOTISM

Would you develop that strange power that fascinates men and women, directs their thoughts and desires and makes you master of every situation?

Life flows full for those who know the secrets of hypnotic influence; for those who develop their magnetic powers. You can learn at home, cure disease and bad habits without drugs, drive worry and fear from your mind, improve your memory, overcome domestic difficulties, give thrilling entertainments and develop a powerfully magnetic will power that will enable you to overcome all obstacles to your success.

You can hypnotize people quick as a flash, put yourself or others to sleep at any hour, day or night; banish pain and suffering. Our free book "The Philosophy of Personal Influence" explains exactly how you can acquire this power and use it to better your position in life. It is endorsed by ministers of the gospel, lawyers, doctors, business men and society women! Though its benefits are beyond price it costs you nothing. We give it away to advertise this institution. Write for it to-day. (On letters use a 5 cent stamp).

PARIS COLLEGE OF PSYCHOLOGY
Dept. G-2, 7 Rue Auber, PARIS, France.

Send for this amazing BIG DREAM BOOK AND FORTUNE TELLER, telling the meaning of almost any dream; also how to tell fortune by cards, tea leaves, dominoes, nails, moles, palmistry, astrology. Gives "lucky" numbers and days. Curious Ancient Beliefs. Moon Judgments, Signs, Omens. Contains Napoleon's Oracle of Fate, Weather Wisdom, Secret Writing, Fun, Magic and Mystery; Face Reading; Signs of Luck; How to Hypnotize; Horoscopes; Crystal Gazing; Money Making Secrets. How to be lucky in Love; card games, etc. Also $500.00 Prize Contest. Most complete book of this kind ever printed.

Sent FREE to advertise Dr. Jayne's world-famous household remedies, America's Pioneer medicines, sold for 102 years. But please send 10 cents (stamps or a dime) to help pay the cost of this notice, packing and mailing. Dr. D. JAYNE & SON, Inc., 2 Vine St., Phila., Pa., Dept. D-140.

PRE-AGE Your Favorite Home Beverage *Requires Few Days Only*

OAK-AROME gives beverages the aged-in-wood taste that satisfies—adds Nature's own mellowness and pure natural color. This delightful flavor blends perfectly. Made scientifically by roasting finest Mountain White Oak with other selected wood fibers and treated with special imported flavors. GUARANTEED PURE.

FREE! Write today for Free $1.00 Jar Offer of OAK-AROME and our New CATALOG of Home Beverage Supplies.
HOME MFG. CO., Dept. A 850, 18 E. Kinzie St., CHICAGO

High School Course in 2 Years

You can complete this simplified High School Course at home inside of two years. Meets all requirements for entrance to college and the leading professions. This and thirty-six other practical courses are described in our Free Bulletin. Send for it TODAY.

AMERICAN SCHOOL
Dept. H-337 Drexel Ave. & 58th St. © A S 1933 CHICAGO

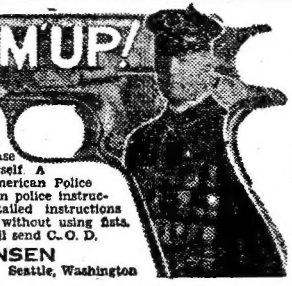
don't WORRY

ABOUT RUPTURE

Why put up with years of needless discomfort and worry? Try a Brooks Automatic Air Cushion. This marvelous appliance permits the opening to close, yet holds rupture securely, comfortably—day and night. Thousands report amazing results. Light, neat-fitting. No hard pads, metal girdle or parts to chafe or gouge. Patented in U. S. and 13 foreign countries. Try one 10 DAYS WITHOUT A PENNY'S RISK. You'll be delighted. Free book on Rupture and convincing facts mailed postpaid in plain sealed envelope. Address

BROOKS COMPANY, 599-G State St., Marshall, Mich.

STICK 'EM UP!



Regardless of strength or size defend yourself and friends against any foul attack, from bullies or by gun, knife or club. Subdue with ease persons much stronger than yourself. A complete course on approved American Police Jiu-Jitsu by internationally known police instructor. 151 illustrations with detailed instructions pocket size. 13 knockout blows without using fists. Send One Dollar Full Price, or will send C. O. D.

S. J. JORGENSEN
1050 Maritime Building Seattle, Washington

U.S. GOVT POSITIONS
for MEN-WOMEN AGE 18 to 50

Anyone desiring future Gov't. Positions, $1260 to $3000 year, should send name and address immediately to **INSTRUCTION BUREAU, Dept. 112, ST. LOUIS, MO.** and receive FREE list of in and outside positions, giving salaries, how to qualify, locations, opportunities, etc.

Here's a Profitable BUSINESS FREE

MONEY MAKING OPPORTUNITY FOR YOU

No experience needed to act as our representative for Master work garments. Every business concern a prospect. Advertising embroidered on garment is a big sales feature. Easy, pleasant work. You receive pay daily in big cash commissions. You can easily add up to $45.00 weekly to your regular income. We supply everything needed entirely FREE. Write

GEO. MASTER GARMENT CO., DEPT. 734
Ligonier, Indiana

WRITERS—ATTENTION!

AUTHORS and COMPOSERS CIRCULATING LEAGUE
Organized for the Advancement of the Arts

Authors, Composers, Scenario Writers, Novelists, Short Story Writers, Lyric Writers, Radio Sketch Writers.

WRITE the League regarding its absolutely FREE service to the unknown writer.

DON'T DELAY—SEND FOR PARTICULARS

AUTHORS and COMPOSERS CIRCULATING LEAGUE
1114 Metcalf Avenue New York City, N. Y.

DEAFNESS IS MISERY

Many people with defective hearing and Head Noises enjoy conversation, go to Theatre and Church because they use Leonard Invisible Ear Drums which resemble Tiny Megaphones fitting in the Ear entirely out of sight. No wires, batteries or head piece. They are inexpensive. Write for booklet and sworn statement of the inventor who was himself deaf.

A. O. LEONARD, Inc., Suite 883, 70 5th Ave., New York

Have you seen the new

RANGELAND LOVE STORIES

Tales of girls Wind-kissed and Courageous

Stories of men Capable and True

Illustrated with photographs of your favorite Western movie stars!

Only 15 Cents

11 ALLURING BEAUTY NEEDS
All Full Sized Nationally Advertised Products

98¢
PLUS POSTAGE
COMPLETE

BAREE
VANISHING CREAM
Regularly priced $1.00 a jar. A magical beautifier and skin cleanser.
BAREE SHAMPOO
Regularly priced $1.00. A genuine coconut oil shampoo enhanced by the most ornastic bottle to beautify your boudoir.
BAREE
LILAC TOILET WATER
Regularly priced at $1.00. This very exquisite achievement priced for a sweet, mysterious, fascinating odor.
BAREE
CLEANSING CREAM
Regularly priced $1.00. Maintain school-girl youthfulness. A cleansing cream such as this is necessary.
PURSE SIZE PERFUME
Regularly priced $1.50. Here is a superb purse size Garden of Eden. A new odor that will entrance you.
BAREE
FACE
LOTION
Regularly priced at 50c. Excellent for protecting skin and keeping it soft. Delightfully refreshing for make-up.
BAREE FACE POWDER
Regularly priced $1.00. The mastery and uncanny craftsmanship of our chemist is emphasized in the presentation of this new soft, satisfying face powder.
BAREE
BRILLIANTINE
Regularly priced at 50c. The hair is woman's crowning glory. Baree offers you just what you need to give your hair that natural looking lustre and gloss effect.
BAREE
PERFUME DE-LITE
Regularly priced $3.00. The exotic fragrance and fascination of this entrancing perfume will delight you.
BAREE LIP ROUGE
Regularly priced 50c. Packed in liberal size jar to be used for either lips or face.
BAREE
NAIL POLISH
Regularly priced 50c. You'll rave over this extraordinary nail polish.

11.50 WORTH of TOILET REQUISITES 98c Plus Postage

Each and every item is of selected ingredients. Guaranteed to be pure. The BAREE name stands for quality. The BAREE name has been before public for many years. Each and every package is full size as nationally advertised. Most any item included in this sensational combination of 11 pieces alone—what we ask for the eleven alluring beauty needs offered here.

This is a get-acquainted offer. We want to make new friends. We want you to try our products at a bargain price and be convinced that the BAREE preparations are the ones you should always use.

Your Guarantee

Each article is guaranteed as represented and to please or you may return purchase and we will refund your money.

SEND NO MONEY

IF YOU DO NOT CARE TO DESTROY COVER OF MAGAZINE SEND YOUR ORDER ON PLAIN PAPER or drop coupon in envelope and mail to us. Your package containing the 11 alluring beauty needs will be sent by return mail. Pay postman 98c, plus postage. Clip coupon today—NOW.

PREFERRED TOILETRIES, Inc., Dept. 5603 150 Nassau St., New York, N. Y.

PREFERRED TOILETRIES, Inc., 5603
150 Nassau Street, New York, N. Y.

Send the 11 beautiful packages containing regular full size Baree beauty needs, described. Upon arrival I will pay postman 98c, plus postage. I can return and get money back if I am not satisfied.

Name .....

Street .....

City ..... State .....

Shade of Face Powder .....

Orders from Canada and foreign countries must contain M. O. for $1.50.

Mildness and Characier
LUCKY STRIKE
"IT'S TOASTED"
CIGARETTES
"It's toasted"
Copr., 1933, The American Tobacco Co.